Manual No.'10•SRK-T-100

MHI

TECHNICAL MANUAL

INVERTER WALL MOUNTED TYPE RESIDENTIAL AIR-CONDITIONERS
(Split system, air to air heat pump type)

SRK25ZJP-S
SRK35ZJP-S
SRK50ZJP-S

MITSUBISHI HEAVY INDUSTRIES, LTD.

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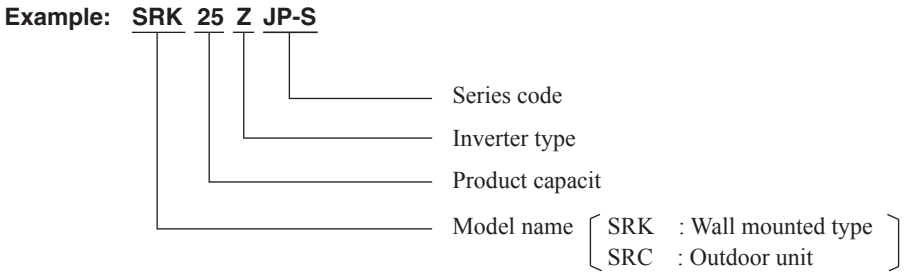
■How to read the model name



1. SPECIFICATIONS

Adapted to **RoHS** directive

Item \ Model					SRK25ZJP-S	
					Indoor unit **SRK25ZJP-S**	Outdoor unit **SRC25ZJP-S**
Cooling capacity (1)				W	2500 (1000 (Min.)～2700 (Max.))	
Heating capacity (1)				W	3200 (1200 (Min.)～4200 (Max.))	
Power supply					1 Phase, 220～240 V, 50Hz	
Operation data (1)	Power consumption		Cooling	kW	0.71 (0.21～0.88)	
			Heating		0.86 (0.27～1.46)	
	Running current		Cooling	A	3.6 / 3.4 / 3.3 (220/ 230/ 240 V)	
			Heating		4.2 / 4.0 / 3.9 (220/ 230/ 240 V)	
	Inrush current				4.2 / 4.0 / 3.9 (220/ 230/ 240 V)	
	COP		Cooling		3.52	
			Heating		3.72	
	Noise level	Cooling	Sound level	dB(A)	Hi : 36 Me : 30 Lo : 22	46
			Power level	dB	52	56
		Heating	Sound level	dB(A)	Hi : 35 Me : 30 Lo : 26	48
			Power level	dB	51	58
Exterior dimensions (Height x Width x Depth)				mm	268 x 790 x 224	540 x 780 (+62) x 290
Exterior appearance (Munsell color)					Fine snow (8.0Y 9.3/0.1) near equivalent	Stucco white (4.2Y 7.5/1.1) near equivalent
Net weight				kg	8.5	32
Refrigerant equipment	Compressor type & Q'ty				—	RM-B5077MDE1 (Rotary type) x 1
	Motor (Starting method)			kW	—	0.75 (Line starting)
	Refrigerant oil			ℓ	0.35 (DIAMOND FREEZE MA68)	
	Refrigerant (3)			kg	R410A 0.75 (Pre-Charged up to the piping length of 10m)	
	Heat exchanger				Louver fins & inner grooved tubing	M fins & inner grooved tubing
	Refrigerant control				Capillary tubes + Electronic expansion valve	
	Deice control				Microcomputer control	
Air handling equipment	Fan type & Q'ty				Tangential fan x 1	Propeller fan x 1
	Motor			W	38	24
	Air flow		Cooling	CMM	Hi : 8.0 Me : 6.2 Lo : 4.5	29.5
			Heating		Hi : 9.3 Me : 7.8 Lo : 6.6	25.6
	Fresh air intake				Not possible	—
	Air filter, Quality / Quantity				Polypropylene net (washable) x 2	—
Shock & vibration absorber					—	Cushion rubber (for compressor)
Operation control	Operation switch				Wireless-Remote control	—
	Room temperature control				Microcomputer thermostat	—
	Operation Display				RUN : Green, TIMER : Yellow, HI POWER : Green, ECONO : Orange	
Safety devices					Compressor overheat protection, Overcurrent protection, Frost protection, Serial signal error protection, Fan motor error protection, Heating overload protection (High pressure control), Cooling overload protection	
Installation data	Refrigerant piping size (O.D)			mm	Liquid line: ϕ6.35 (1/4") Gas line: ϕ9.52 (3/8")	
	connecting method				Flare connecting	
	Attached length of piping			m	Liquid line : 0.4 Gas line : 0.33	—
	Insulation for piping				Necessary (Both sides), independent	
	Refrigerant line (one way) length			m	Max. 15	
	Vertical height difference between outdoor unit and indoor unit				Max.10 (Outdoor unit is higher) Max.10 (Outdoor unit is lower)	
Drain hose					Connectable (VP 16)	—
Power cable					2m (3 Cores wih Earth)	
Recommended breaker size				A	16	
Connection wiring		Size x Core number			1.5mm^2 x 4 cores (Including earth cable)	
		Connecting method			Terminal block (Screw fixing type)	
Accessories (included)					Mounting kit	
Optional parts					—	

Note (1) The data are measured at the following conditions. The pipe length is 7.5m.

Item / Operation	Indoor air temperature DB	Indoor air temperature WB	Outdoor air temperature DB	Outdoor air temperature WB	Standards
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1, JIS C 9612
Heating	20˚C	—	7˚C	6˚C	

(2) This air-conditioner is manufactured and tested in conformity with the ISO.
(3) The operation data are applied to the 220/230/240V districts respectively.
(4) The refrigerant quantity to be charged includes the refrigerant in 10m connecting piping.
(Purging is not required even for the short piping.)

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Adapted to **RoHS** directive

Item \ Model					SRK35ZJP-S	
					Indoor unit **SRK35ZJP-S**	Outdoor unit **SRC35ZJP-S**
Cooling capacity (1)				W	3500 (1000 (Min.)～3700 (Max.))	
Heating capacity (1)				W	4000 (1300 (Min.)～4800 (Max.))	
Power supply					1 Phase, 220～240 V, 50Hz	
Operation data (1)	Power consumption		Cooling	kW	1.06 (0.21～1.24)	
			Heating		1.09 (0.29～1.58)	
	Running current		Cooling	A	5.1 / 4.9 / 4.6 (220/ 230/ 240 V)	
			Heating		5.2 / 5.0 / 4.8 (220/ 230/ 240 V)	
	Inrush current				5.2 / 5.0 / 4.8 (220/ 230/ 240 V)	
	COP		Cooling		3.30	
			Heating		3.67	
	Noise level	Cooling	Sound level	dB(A)	Hi : 39 Me : 32 Lo : 23	49
			Power level	dB	54	59
		Heating	Sound level	dB(A)	Hi : 41 Me : 36 Lo : 27	51
			Power level	dB	57	61
Exterior dimensions (Height x Width x Depth)				mm	268 x 790 x 224	540 x 780 (+62) x 290
Exterior appearance (Munsell color)					Fine snow (8.0Y 9.3/0.1) near equivalent	Stucco white (4.2Y 7.5/1.1) near equivalent
Net weight				kg	8.5	35
Refrigerant equipment	Compressor type & Q'ty				—	RM-B5077MDE1 (Rotary type) x 1
	Motor (Starting method)			kW	—	0.90 (Line starting)
	Refrigerant oil			ℓ	0.35 (DIAMOND FREEZE MA68)	
	Refrigerant (3)			kg	R410A 1.05 (Pre-Charged up to the piping length of 15m)	
	Heat exchanger				Slit fins & inner grooved tubing	M fins & inner grooved tubing
	Refrigerant control				Capillary tubes + Electronic expansion valve	
	Deice control				Microcomputer control	
Air handling equipment	Fan type & Q'ty				Tangential fan x 1	Propeller fan x 1
	Motor			W	38	24
	Air flow		Cooling	CMM	Hi : 8.5 Me : 6.8 Lo : 4.6	27.8
			Heating		Hi : 11.0 Me : 8.4 Lo : 6.8	27.8
	Fresh air intake				Not possible	—
	Air filter, Quality / Quantity				Polypropylene net (washable) x 2	—
Shock & vibration absorber					—	Cushion rubber (for compressor)
Operation control	Operation switch				Wireless-Remote control	—
	Room temperature control				Microcomputer thermostat	—
	Operation Display				RUN : Green, TIMER : Yellow, HI POWER : Green, ECONO : Orange	
Safety devices					Compressor overheat protection, Overcurrent protection, Frost protection, Serial signal error protection, Fan motor error protection, Heating overload protection (High pressure control), Cooling overload protection	
Installation data	Refrigerant piping size (O.D)			mm	Liquid line : ϕ6.35 (1/4") Gas line : ϕ9.52 (3/8")	
	connecting method				Flare connecting	
	Attached length of piping			m	Liquid line : 0.40 Gas line : 0.33	—
	Insulation for piping				Necessary (Both sides), independent	
	Refrigerant line (one way) length			m	Max. 15	
	Vertical height difference between outdoor unit and indoor unit				Max.10 (Outdoor unit is higher) Max.10 (Outdoor unit is lower)	
Drain hose					Connectable (VP 16)	—
Power cable					2m (3 Cores wih Earth)	
Recommended breaker size				A	16	
Connection wiring		Size x Core number			1.5mm^2 x 4 cores (Including earth cable)	
		Connecting method			Terminal block (Screw fixing type)	
Accessories (included)					Mounting kit	
Optional parts					—	

Note (1) The data are measured at the following conditions. The pipe length is 7.5m.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1 , JIS C 9612
Heating	20˚C	—	7˚C	6˚C	

(2) This air-conditioner is manufactured and tested in conformity with the ISO.
(3) The operation data are applied to the 220/230/240V districts respectively.
(4) The refrigerant quantity to be charged includes the refrigerant in 15m connecting piping.
(Purging is not required even for the short piping.)

RWA000Z232

Adapted to **RoHS** directive

Item \ Model					SRK50ZJP-S	
					Indoor unit **SRK50ZJP-S**	Outdoor unit **SRC50ZJP-S**
Cooling capacity (1)				W	5000 (1600 (Min.)～5500 (Max.))	
Heating capacity (1)				W	5800 (1600 (Min.)～6600 (Max.))	
Power supply					1 Phase, 220～240 V, 50Hz	
Operation data (1)	Power consumption		Cooling	kW	1.56 (0.40～2.20)	
			Heating		1.60 (0.42～2.10)	
	Running current		Cooling	A	7.2 / 6.9 / 6.6 (220/ 230/ 240 V)	
			Heating		7.3 / 7.0 / 6.7 (220/ 230/ 240 V)	
	Inrush current				7.3 / 7.0 / 6.7 (220/ 230/ 240 V)	
	COP		Cooling		3.21	
			Heating		3.63	
	Noise level	Cooling	Sound level	dB(A)	Hi : 47 Me : 37 Lo : 26	51
			Power level	dB	63	61
		Heating	Sound level	dB(A)	Hi : 47 Me : 40 Lo : 33	53
			Power level	dB	62	63
Exterior dimensions (Height x Width x Depth)				mm	268 x 790 x 224	640 x 800 (+71) x 290
Exterior appearance (Munsell color)					Fine snow (8.0Y 9.3/0.1) near equivalent	Stucco white (4.2Y 7.5/1.1) near equivalent
Net weight				kg	8.5	42
Refrigerant equipment	Compressor type & Q'ty				—	5RS132XAB21 (Rotary type) x 1
	Motor (Starting method)			kW	—	1.50 (Line starting)
	Refrigerant oil			ℓ	0.37 (FV50S)	
	Refrigerant (3)			kg	R410A 1.35 (Pre-Charged up to the piping length of 15m)	
	Heat exchanger				Slit fins & inner grooved tubing	M fins & inner grooved tubing
	Refrigerant control				Capillary tubes + Electronic expansion valve	
	Deice control				Microcomputer control	
Air handling equipment	Fan type & Q'ty				Tangential fan x 1	Propeller fan x 1
	Motor			W	38	34
	Air flow		Cooling	CMM	Hi : 11.0 Me : 7.6 Lo : 4.7	36.0
			Heating		Hi : 13.8 Me : 10.7 Lo : 8.3	36.0
	Fresh air intake				Not possible	—
	Air filter, Quality / Quantity				Polypropylene net (washable) x 2	—
Shock & vibration absorber					—	Cushion rubber (for compressor)
Operation control	Operation switch				Wireless-Remote control	—
	Room temperature control				Microcomputer thermostat	—
	Operation Display				RUN : Green, TIMER : Yellow, HI POWER : Green, ECONO : Orange	
Safety devices					Compressor overheat protection, Overcurrent protection, Frost protection, Serial signal error protection, Fan motor error protection, Heating overload protection (High pressure control), Cooling overload protection	
Installation data	Refrigerant piping size (O.D)			mm	Liquid line : ϕ6.35 (1/4") Gas line : ϕ12.7 (1/2")	
	connecting method				Flare connecting	
	Attached length of piping			m	Liquid line : 0.4 Gas line : 0.33	—
	Insulation for piping				Necessary (Both sides), independent	
	Refrigerant line (one way) length			m	Max. 25	
	Vertical height difference between outdoor unit and indoor unit				Max. 15 (Outdoor unit is higher) Max. 15 (Outdoor unit is lower)	
Drain hose					Connectable (VP 16)	—
Power cable					2m (3 Cores wih Earth)	
Recommended breaker size				A	16	
Connection wiring	Size x Core number				1.5mm^2 x 4 cores (Including earth cable)	
	Connecting method				Terminal block (Screw fixing type)	
Accessories (included)					Mounting kit	
Optional parts					—	

Note (1) The data are measured at the following conditions.

The pipe length is 7.5m.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1 , JIS C 9612
Heating	20˚C	—	7˚C	6˚C	

(2) This air-conditioner is manufactured and tested in conformity with the ISO.
(3) The operation data are applied to the 220/230/240V districts respectively.
(4) The refrigerant quantity to be charged includes the refrigerant in 15m connecting piping.
(Purging is not required even for the short piping.)

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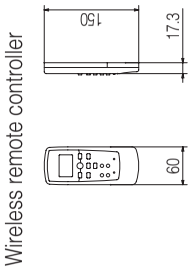
2. EXTERIOR DIMENSIONS

(1) Indoor units

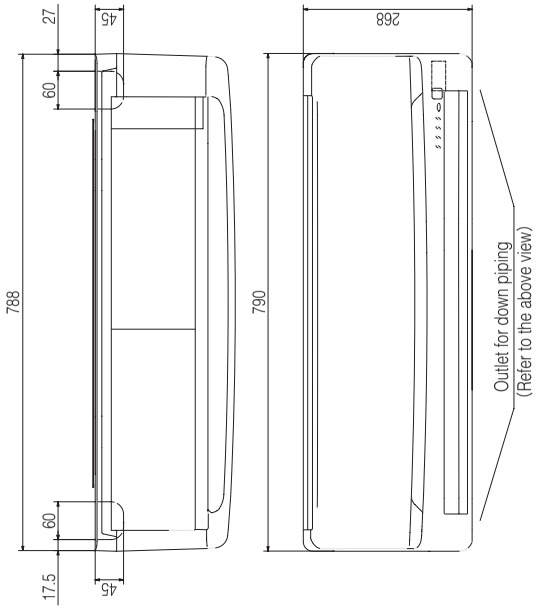
Models SRK25ZJP-S, 35ZJP-S, 50ZJP-S

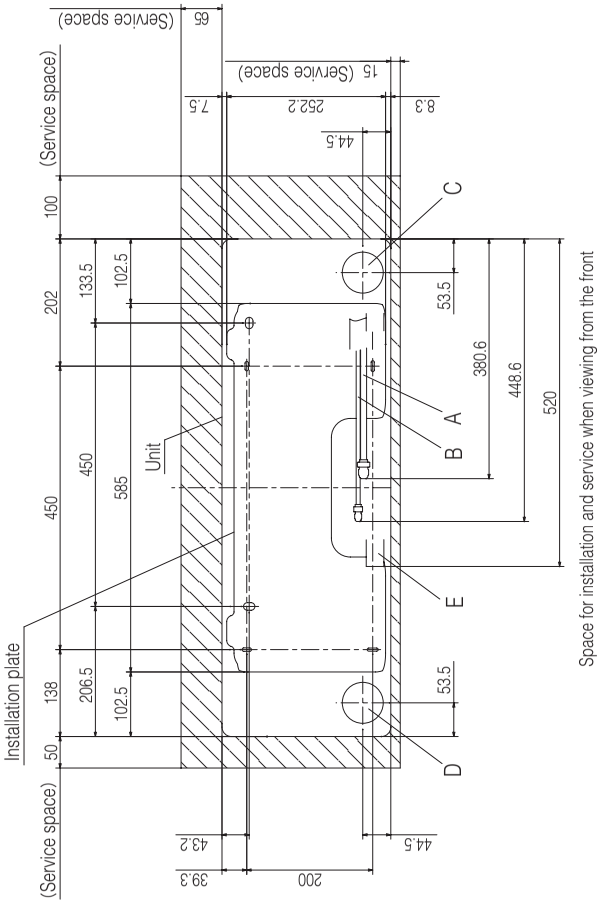
Symbol	Content		
A	Gas piping	Model 25,35	ϕ9.52 (3/8") (Flare)
		Model 50	ϕ12.7 (1/2") (Flare)
B	Liquid piping	ϕ6.35 (1/4") (Flare)	
C	Hole on wall for right rear piping	(ϕ65)	
D	Hole on wall for left rear piping	(ϕ65)	
E	Drain hose	VP16	
F	Outlet for wiring		
G	Outlet for piping (on both side)		



Note (1) The model name label is attached on the underside of the panel.

Unit:mm





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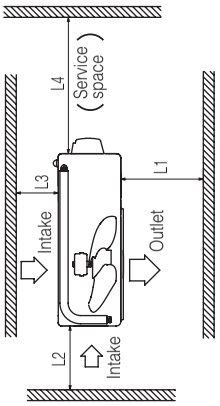
(2) Outdoor units

Models SRC25ZJP-S, 35ZJP-S

Notes
(1) It must not be surrounded by walls on the four sides.
(2) The unit must be fixed with anchor bolts. An anchor bolt must not protrude more the 15mm.
(3) Where the unit is subject to strong winds, lay it in such a direction that the blower outlet faces perpendicularly to the dominant wind direction.
(4) Leave 1m or more space above the unit.
(5) A wall in front of the blower outlet must not exceed the units height.
(6) The model name label is attached on the lower right corner of the front panel.

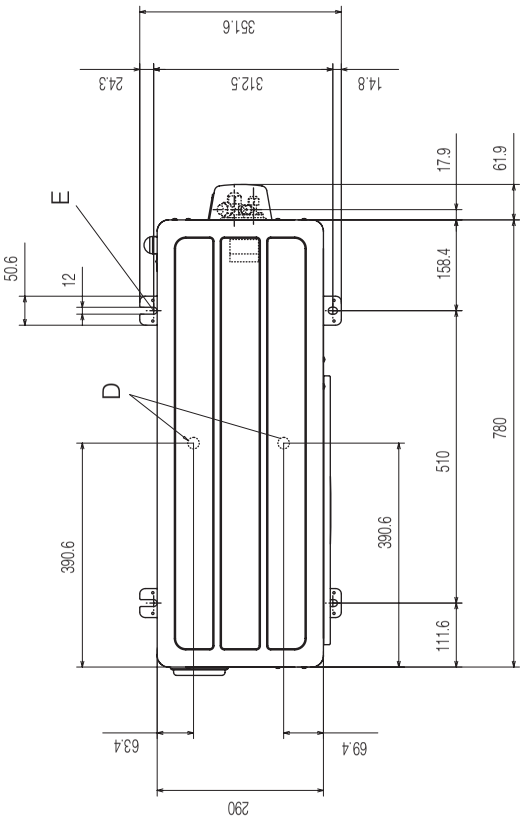


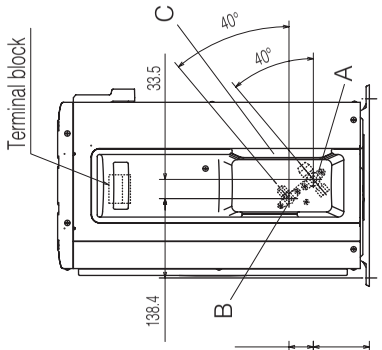
Minimum installation space

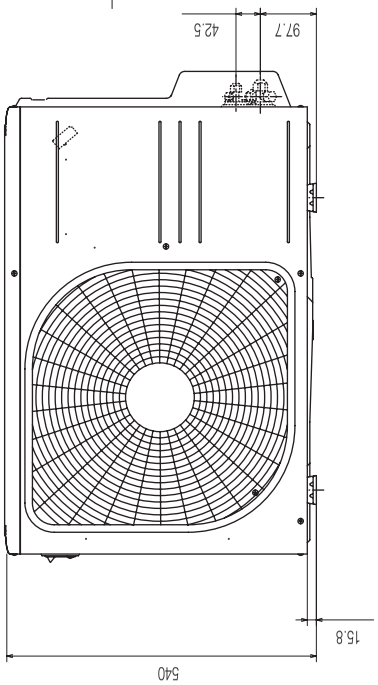
Examples of installation / Dimensions	I	II	III	IV
L1	Open	280	280	180
L2	100	75	Open	Open
L3	100	80	80	80
L4	250	Open	250	Open

Symbol	Content	
A	Service valve connection (gas side)	ϕ9.52 (3/8") (Flare)
B	Service valve connection (liquid side)	ϕ6.35 (1/4") (Flare)
C	Pipe / cable draw-out hole	ϕ20 x 2places
D	Drain discharge hole	M10 x 4places
E	Anchor bolt hole	

Unit:mm







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Model SRC50ZJP-S

Notes
(1) It must not be surrounded by walls on the four sides.
(2) The unit must be fixed with anchor bolts. An anchor bolt must not protrude more the 15mm.
(3) Where the unit is subject to strong winds, lay it in such a direction that the blower outlet faces perpendicularly to the dominant wind direction.
(4) Leave 1m or more space above the unit.
(5) A wall in front of the blower outlet must not exceed the units height.
(6) The model name label is attached on the right side of the unit.

Minimum installation space

Examples of installation / Dimensions	I	II	III	IV
L1	Open	280	280	180
L2	100	75	Open	Open
L3	100	80	80	80
L4	250	Open	250	Open

Unit:mm

Symbol	Content	
A	Service valve connection (gas side)	ϕ12.7 (1/2") (Flare)
B	Service valve connection (liquid side)	ϕ6.35 (1/4") (Flare)
C	Pipe/cable draw-out hole	
D	Drain discharge hole	ϕ20 × 5places
E	Anchor bolt hole	M10 × 4places

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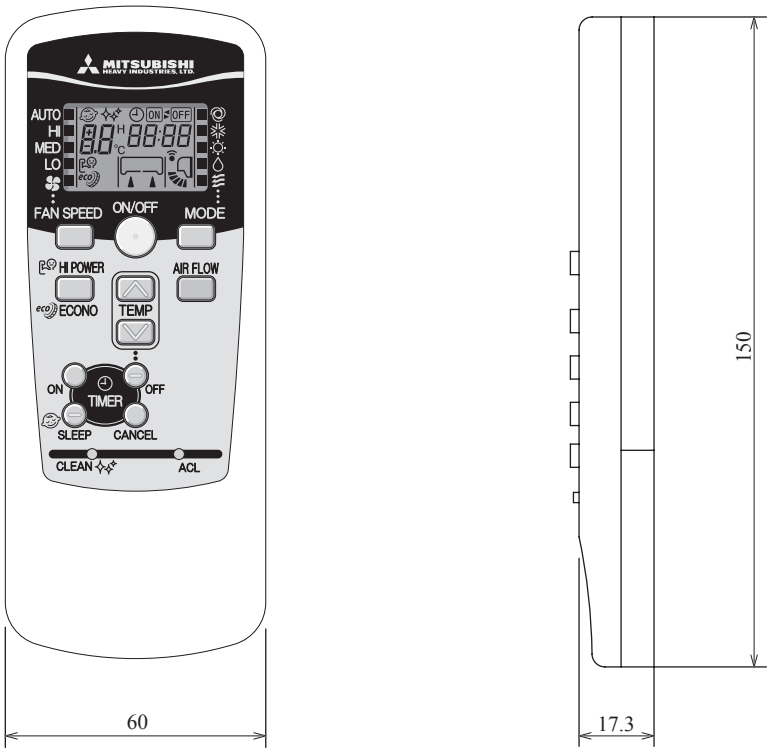
(3) Wireless remote controller

Unit: mm



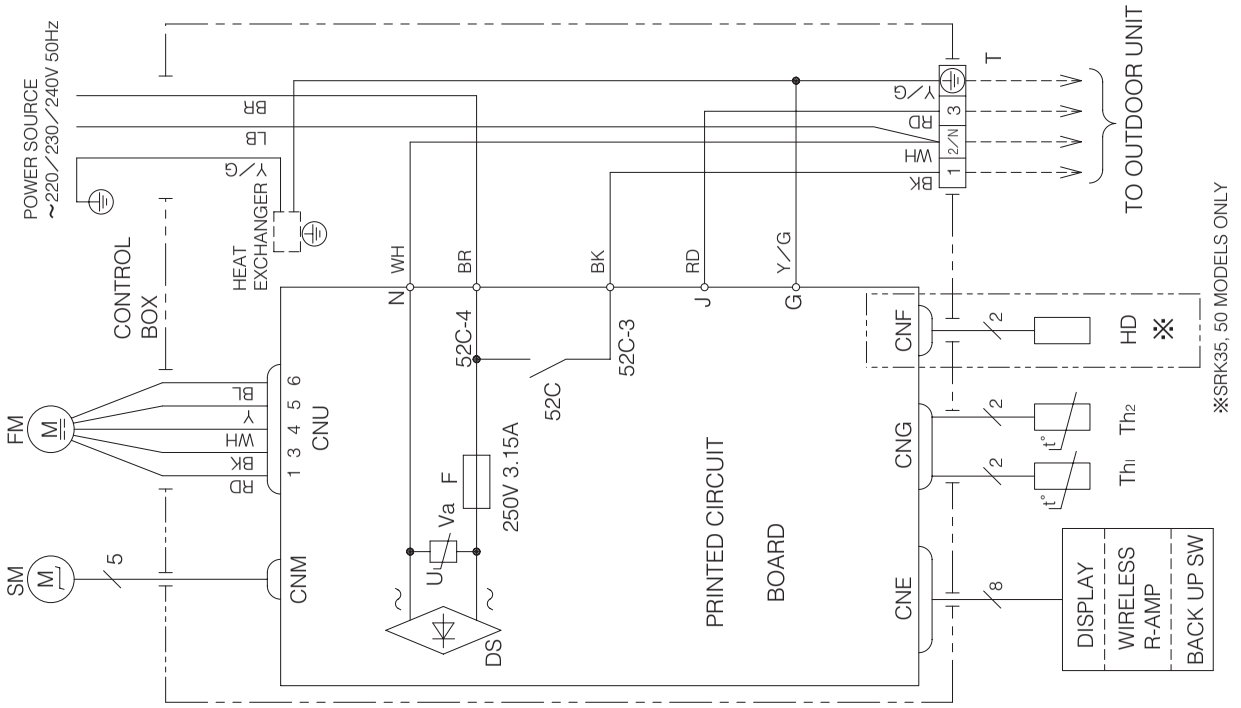
3. ELECTRICAL WIRING

(1) Indoor units

Models SRK25ZJP-S, 35ZJP-S, 50ZJP-S

Item	Description
CNE-CNU	Connector
FM	Fan motor
SM	Flap motor
HD	Humidity sensor
Th_I	Room temp. sensor
Th_2	Heat exch. sensor
DS	Diode stack
F	Fuse
T	Terminal block
Va	Varistor

Mark	Color
BK	Black
BL	Blue
RD	Red
WH	White
Y	Yellow
Y/G	Yellow/Green
LB	Light blue
BR	Brown



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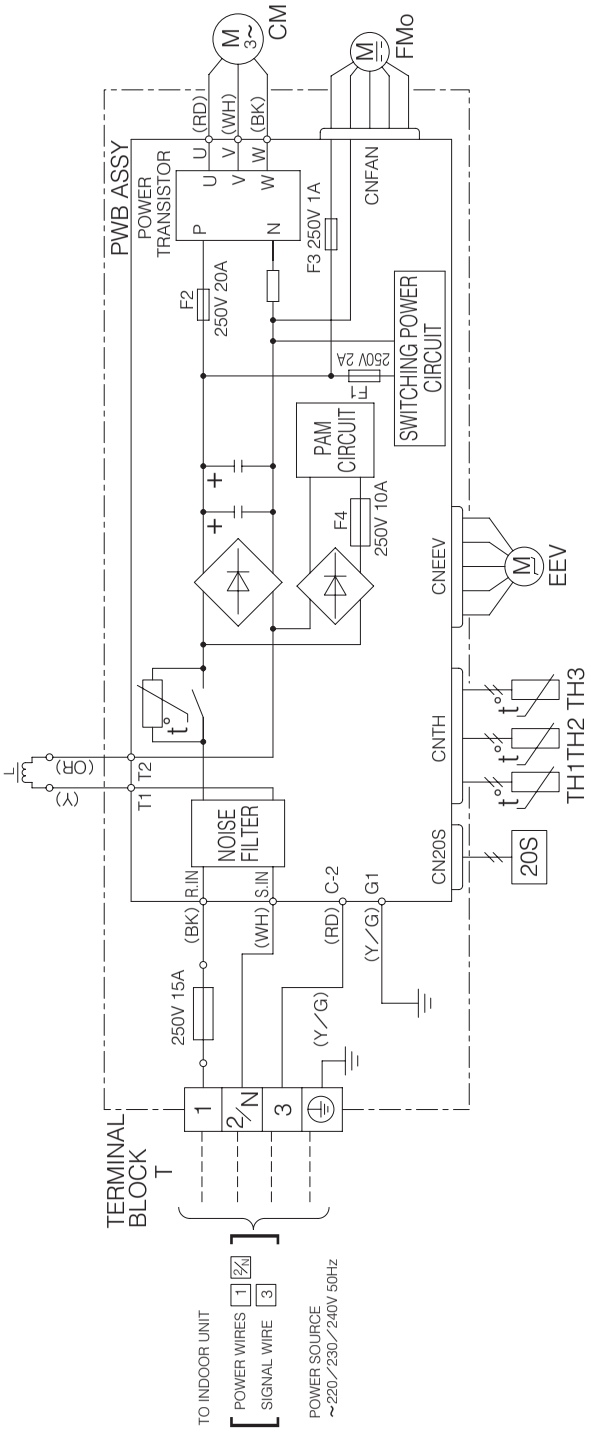
(2) Outdoor units

Models SRC25ZJP-S, 35ZJP-S

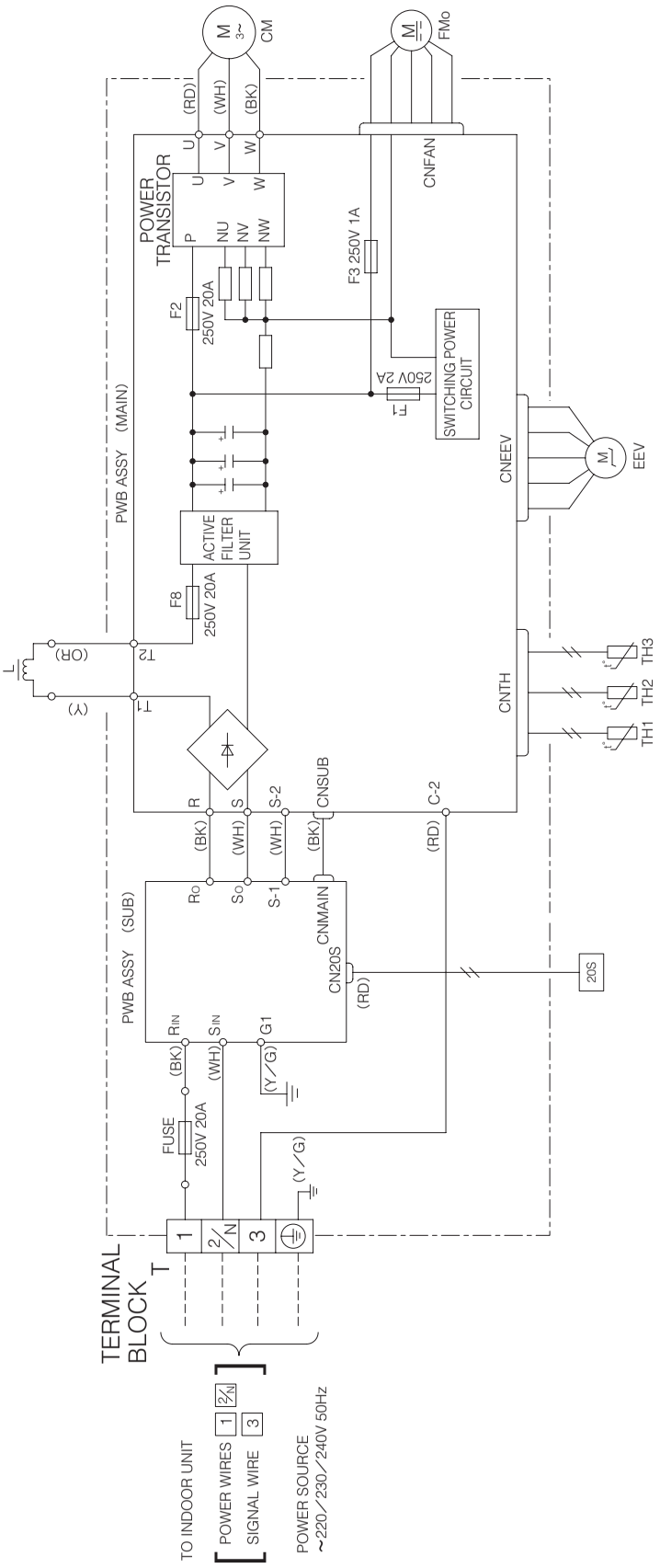


Mark	Color
BK	Black
OR	Orange
RD	Red
WH	White
Y	Yellow
Y／G	Yellow／Green

Item	Description
CM	Compressor motor
CN20S CNTH CNEE	Connector
EEV	Electric expansion valve (coil)
FMo	Fan motor
L	Reactor
T	Terminal block
TH1	Heat exchanger sensor (outdoor unit)
TH2	Outdoor air temp.sensor
TH3	Discharge pipe temp.sensor
20S	Solenoid valve for 4 way valve

RWC000Z236

Model SRC50ZJP-S



Mark	Color
BK	Black
OR	Orange
RD	Red
WH	White
Y	Yellow
Y／G	Yellow／Green

Item	Description
CM	Compressor motor
CN20S CNTH CNEE	Connector
EEV	Electric expansion valve (coil)
FMo	Fan motor
L	Reactor
T	Terminal block
TH1	Heat exchanger sensor (outdoor unit)
TH2	Outdoor air temp.sensor
TH3	Discharge pipe temp.sensor
20S	Solenoid valve for 4 way valve

RWC000Z237

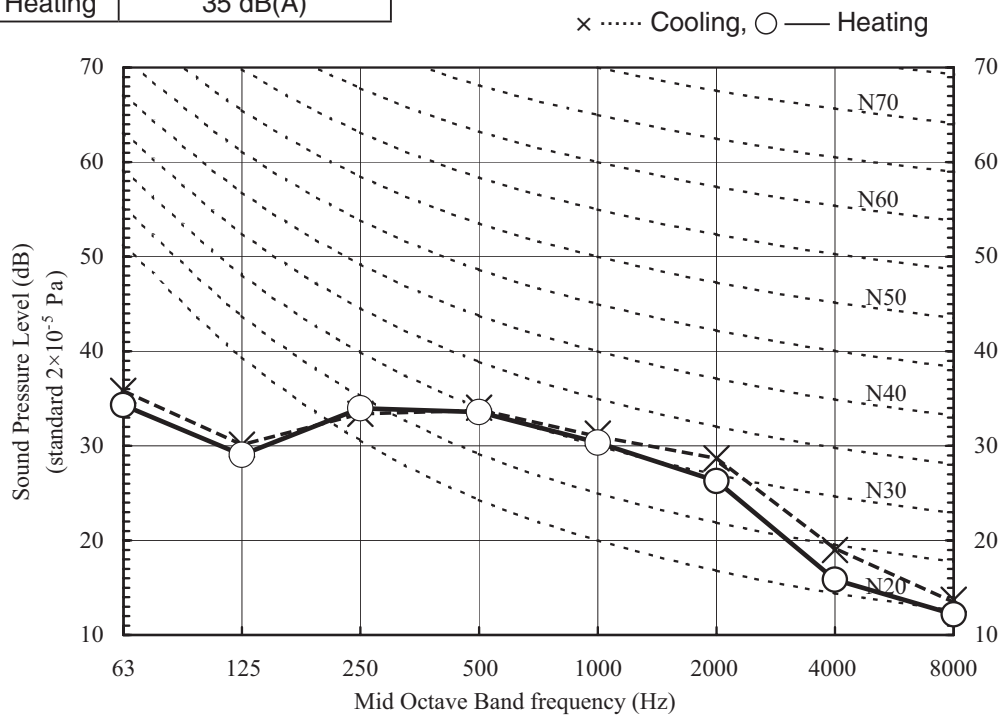
4. NOISE LEVEL

Model SRK25ZJP-S

Condition	ISO-T1,JIS C9612

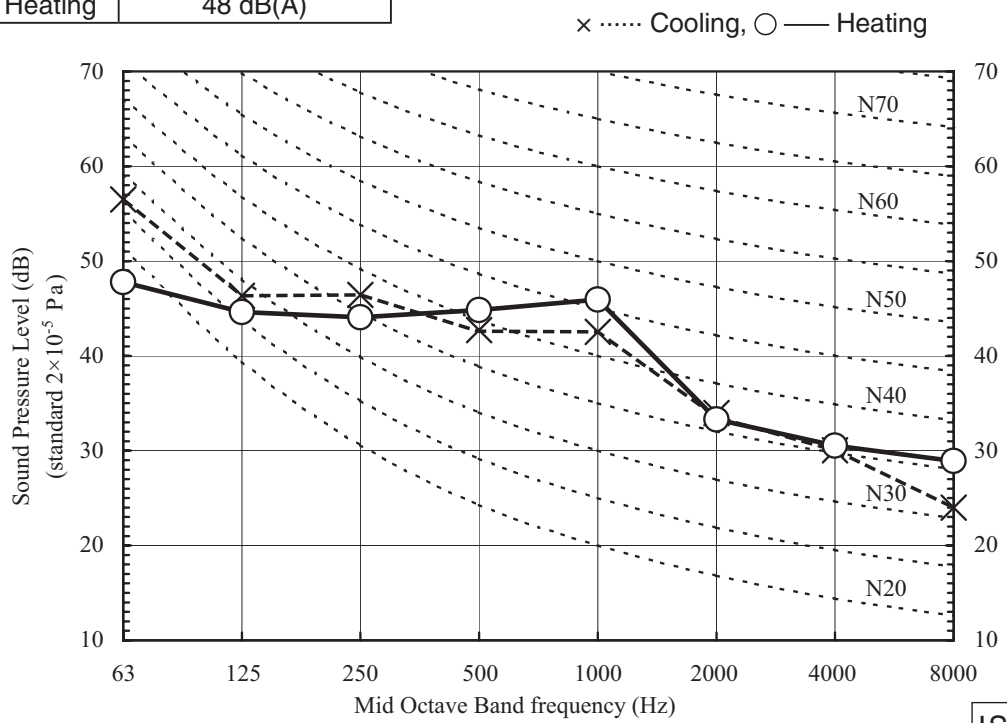
(Indoor Unit)

Model	SRK25ZJP-S	
Noise Level	Cooling	36 dB(A)
	Heating	35 dB(A)



(Outdoor Unit)

Model	SRC25ZJP-S	
Noise Level	Cooling	46 dB(A)
	Heating	48 dB(A)



ISC09164

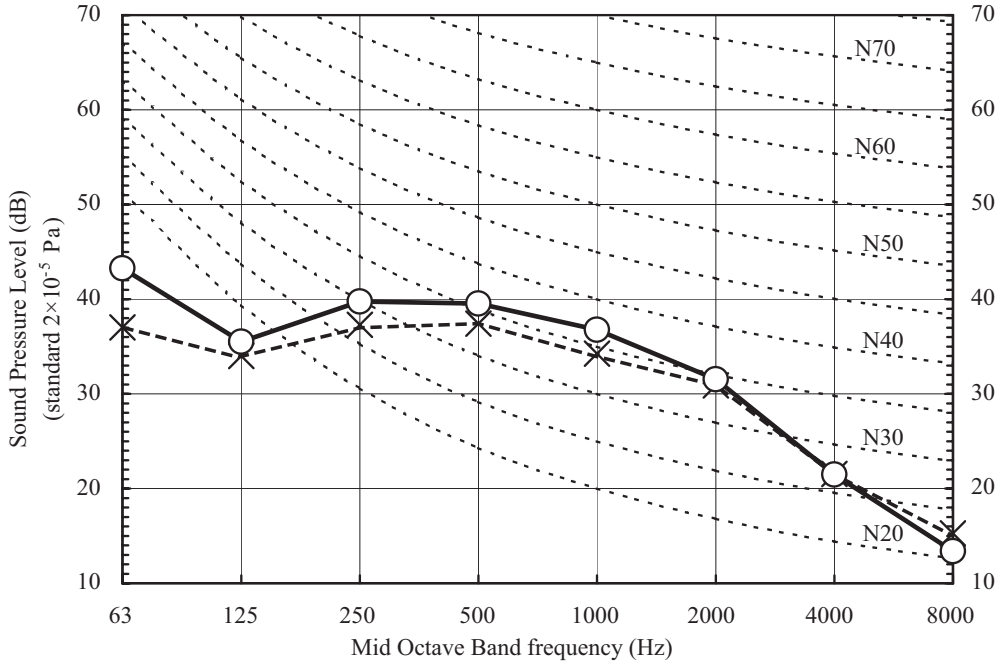
Model SRK35ZJP-S

Condition	ISO-T1,JIS C9612

(Indoor Unit)

Model	SRK35ZJP-S	
Noise Level	Cooling	39 dB(A)
	Heating	41 dB(A)

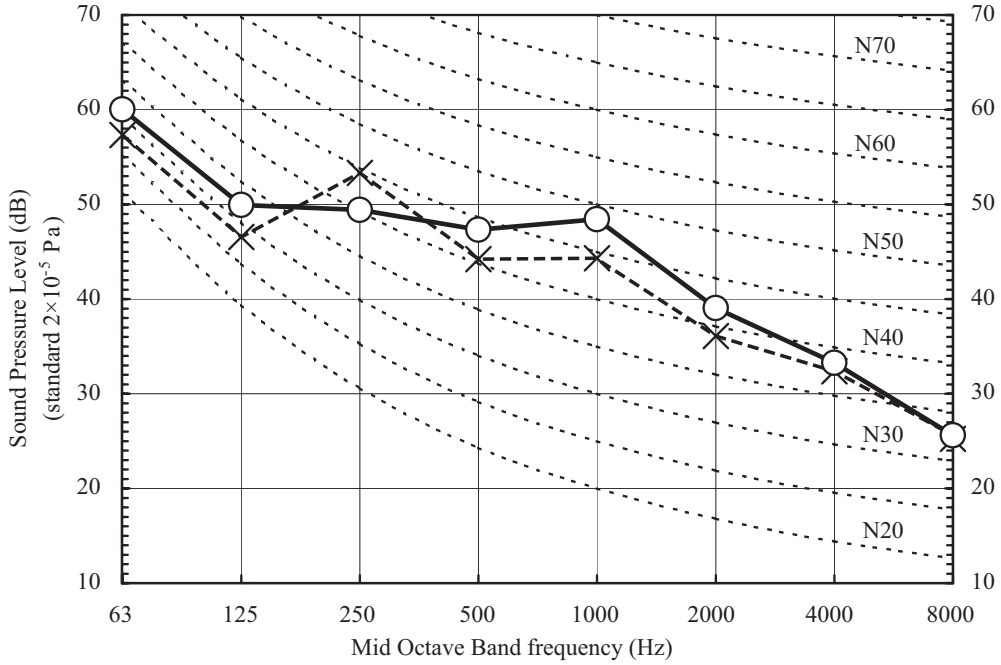
× ····· Cooling, ○ —— Heating



(Outdoor Unit)

Model	SRC35ZJP-S	
Noise Level	Cooling	49 dB(A)
	Heating	51 dB(A)

× ····· Cooling, ○ —— Heating



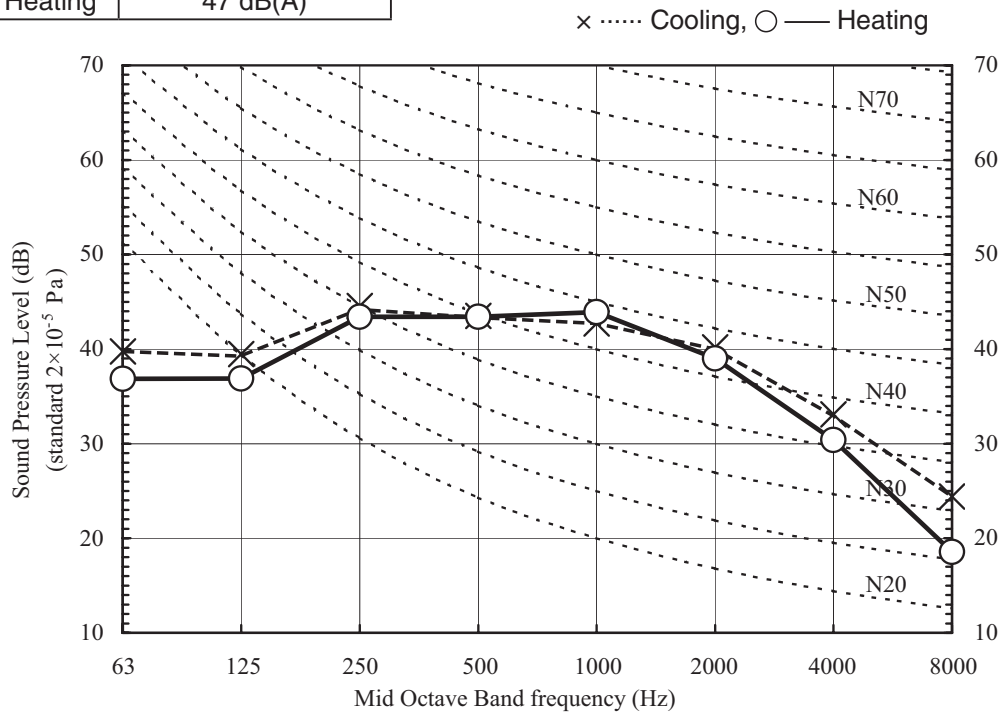
ISC09164

Model SRK50ZJP-S

Condition	ISO-T1,JIS C9612

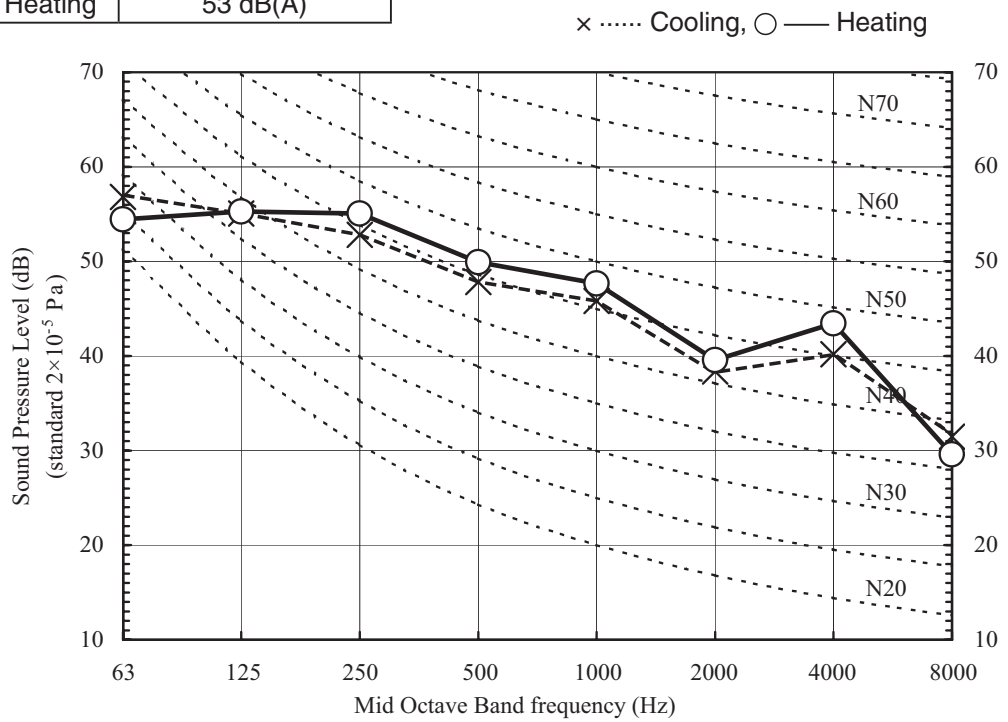
(Indoor Unit)

Model	SRK50ZJP-S	
Noise Level	Cooling	47 dB(A)
	Heating	47 dB(A)



(Outdoor Unit)

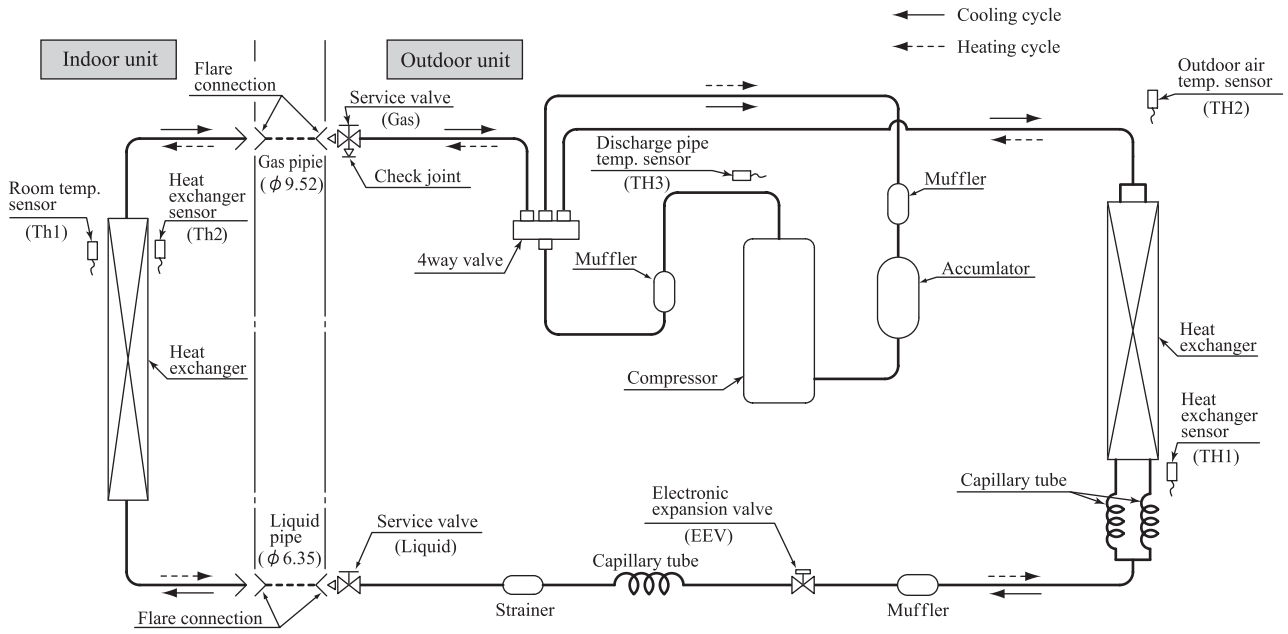
Model	SRC50ZJP-S	
Noise Level	Cooling	51 dB(A)
	Heating	53 dB(A)



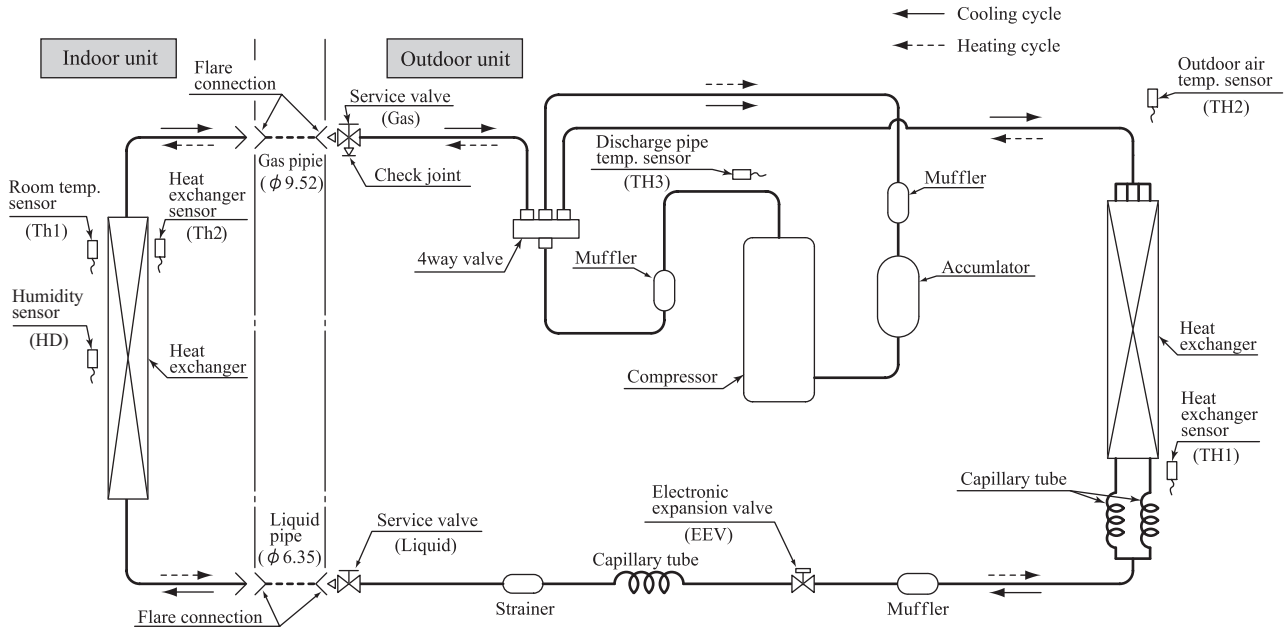
ISC09164

5. PIPING SYSTEM

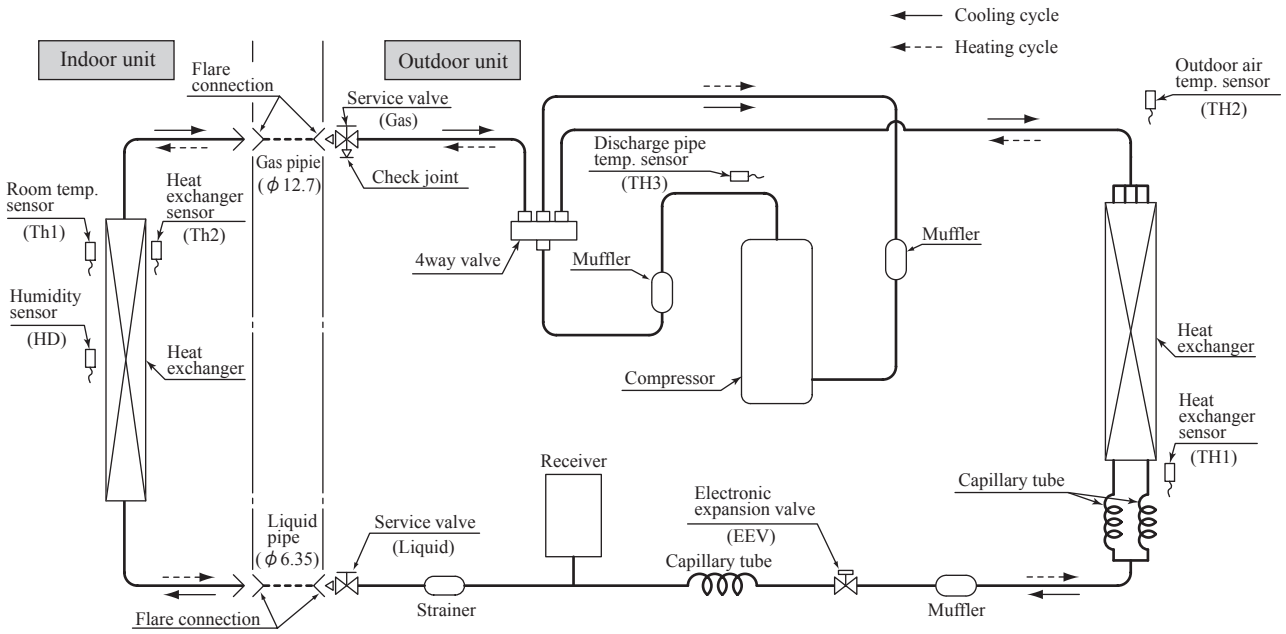
Model SRK25ZJP-S



Model SRK35ZJP-S



Model SRK50ZJP-S



6. RANGE OF USAGE & LIMITATIONS

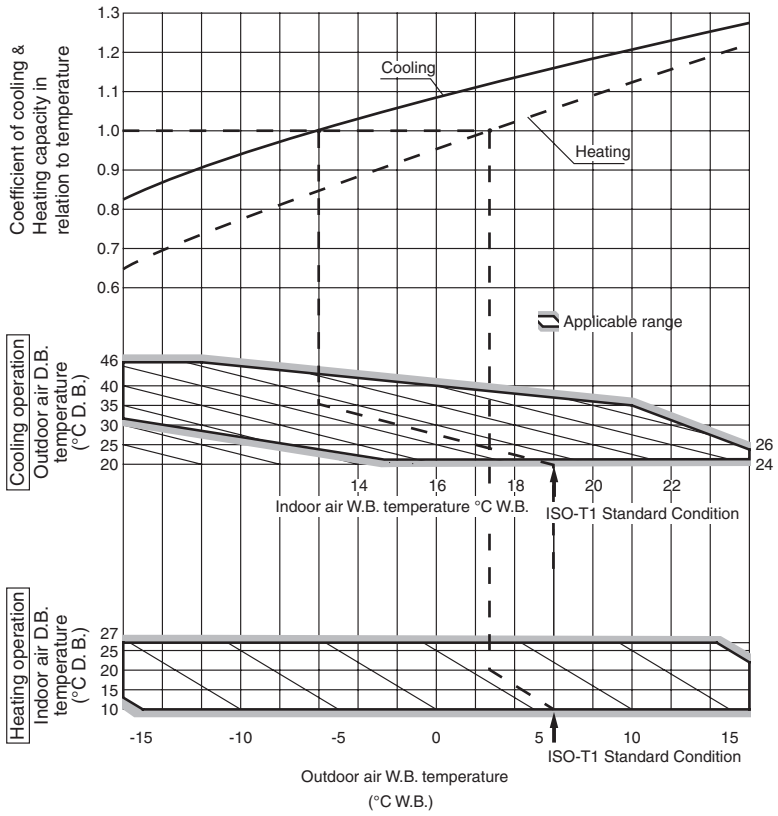
Item \ Models	SRK25ZJP-S, 35ZJP-S	SRK50ZJP-S
Indoor return air temperature (Upper, lower limits)	Cooling operation : Approximately 18 to 32℃ D.B. Heating operation : Approximately 15 to 30℃ D.B. (Refer to the selection chart)	
Outdoor air temperature (Upper, lower limits)	Cooling operation : Approximately +21 to 46℃ D.B. Heating operation : Approximately −15 to 21℃ D.B. (Refer to the selection chart)	
Refrigerant line (one way) length	Max. 15m	Max. 25m
Vertical height difference between outdoor unit and indoor unit	Max. 10m (Outdoor unit is higher) Max. 10m (Outdoor unit is lower)	Max. 15m (Outdoor unit is higher) Max. 15m (Outdoor unit is lower)
Power source voltage	Rating ±10%	
Voltage at starting	Min. 85% of rating	
Frequency of ON-OFF cycle	Max. 4 times/h (Inching prevention 10 minutes)	Max. 7 times/h (Inching prevention 5 minutes)
ON and OFF interval	Min. 3 minutes	

Selection chart

Correct the cooling and heating capacity in accordance with the conditions as follows. The net cooling and heating capacity can be obtained in the following way.

Net capacity = Capacity shown on specification × Correction factors as follows.

(1) Coefficient of cooling and heating capacity in relation to temperatures



*

(2) Correction of cooling and heating capacity in relation to one way length of refrigerant piping

It is necessary to correct the cooling and heating capacity in relation to the one way piping length between the indoor and outdoor units.

Piping length [m]	7	10	15	20	25	30
Cooling	1.0	0.99	0.975	0.965	0.95	0.935
Heating	1.0	1.0	1.0	1.0	1.0	1.0

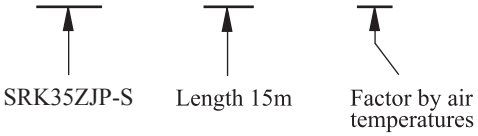
(3) Correction relative to frosting on outdoor heat exchanger during heating

In additions to the foregoing corrections (1), (2) the heating capacity needs to be adjusted also with respect to the frosting on the outdoor heat exchanger.

Air inlet temperature of outdoor unit in °CWB	-15	-10	-9	-7	-5	-3	-1	1	3	5 or more
Adjustment coefficient	0.95	0.95	0.94	0.93	0.91	0.88	0.86	0.87	0.92	1.00

How to obtain the cooling and heating capacity

Example : The net cooling capacity of the model SRK35ZJP-S with the piping length of 15m, indoor wet-bulb temperature at 19.0˚C and outdoor dry-bulb temperature 35˚C is Net cooling capacity = 3500 × 0.975 × 1.0 = 3413 W



7. CAPACITY TABLES

Model SRK25ZJP-S

Cool Mode

Air flow	Outdoor air temp.	Indoor air temp													
		21°CDB		23°CDB		26°CDB		27°CDB		28°CDB		31°CDB		33°CDB	
		14°CWB		16°CWB		18°CWB		19°CWB		20°CWB		22°CWB		24°CWB	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
Hi 8.0 (m^3/min)	10	2.82	2.22	2.95	2.19	3.06	2.27	3.11	2.24	3.16	2.21	3.26	2.28	3.34	2.21
	12	2.77	2.20	2.90	2.16	3.01	2.25	3.07	2.22	3.12	2.19	3.22	2.26	3.31	2.20
	14	2.71	2.17	2.85	2.14	2.97	2.23	3.03	2.20	3.08	2.18	3.18	2.25	3.28	2.19
	16	2.66	2.14	2.80	2.11	2.92	2.21	2.98	2.19	3.04	2.16	3.15	2.24	3.24	2.18
	18	2.60	2.12	2.74	2.09	2.88	2.18	2.94	2.16	2.99	2.13	3.11	2.22	3.20	2.16
	20	2.55	2.09	2.68	2.06	2.83	2.16	2.89	2.14	2.95	2.12	3.07	2.21	3.17	2.15
	22	2.49	2.06	2.63	2.04	2.78	2.14	2.84	2.12	2.90	2.10	3.02	2.19	3.13	2.14
	24	2.43	2.03	2.57	2.01	2.72	2.12	2.80	2.11	2.85	2.08	2.98	2.18	3.08	2.12
	26	2.37	2.00	2.51	1.98	2.67	2.10	2.74	2.09	2.80	2.07	2.93	2.16	3.04	2.11
	28	2.31	1.97	2.44	1.95	2.61	2.08	2.69	2.06	2.75	2.04	2.89	2.14	3.00	2.09
	30	2.24	1.93	2.38	1.91	2.56	2.05	2.64	2.04	2.70	2.02	2.84	2.12	2.95	2.08
	32	2.18	1.90	2.31	1.89	2.50	2.03	2.58	2.02	2.64	2.00	2.79	2.11	2.90	2.06
	34	2.11	1.88	2.25	1.86	2.44	2.00	2.53	2.00	2.59	1.98	2.74	2.09	2.85	2.04
	35	2.08	1.86	2.21	1.85	2.41	1.99	2.50	1.99	2.56	1.97	2.71	2.08	2.83	2.04
	36	2.04	1.84	2.18	1.83	2.38	1.98	2.47	1.98	2.53	1.96	2.69	2.07	2.80	2.03
	38	1.97	1.81	2.11	1.80	2.32	1.95	2.41	1.95	2.47	1.94	2.63	2.05	2.75	2.00
	39	1.94	1.80	2.07	1.79	2.28	1.94	2.38	1.94	2.44	1.92	2.61	2.03	2.72	1.99

Heat Mode

Air flow	outdoor air temp.	indoor air temp				
		16°CDB	18°CDB	20°CDB	22°CDB	24°CDB
Hi 9.3 (m^3/min)	-15°CWB	1.97	1.93	1.88	1.84	1.80
	-10°CWB	2.23	2.19	2.16	2.10	2.06
	-5°CWB	2.41	2.38	2.33	2.30	2.27
	0°CWB	2.53	2.49	2.45	2.42	2.38
	5°CWB	3.22	3.19	3.17	3.10	3.06
	6°CWB	3.27	3.24	3.20	3.16	3.12
	10°CWB	3.48	3.45	3.42	3.38	3.34
	15°CWB	3.79	3.75	3.73	3.69	3.65
	20°CWB	4.07	4.04	4.02	3.97	3.94

Model SRK35ZJP-S

Cool Mode

Air flow	Outdoor air temp.	Indoor air temp													
		21°CDB		23°CDB		26°CDB		27°CDB		28°CDB		31°CDB		33°CDB	
		14°CWB		16°CWB		18°CWB		19°CWB		20°CWB		22°CWB		24°CWB	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
Hi 8.5 (m^3/min)	10	3.94	2.87	4.13	2.82	4.28	2.89	4.35	2.85	4.43	2.80	4.56	2.84	4.68	2.75
	12	3.87	2.83	4.06	2.79	4.22	2.86	4.29	2.82	4.37	2.78	4.51	2.83	4.63	2.73
	14	3.80	2.79	3.99	2.75	4.16	2.83	4.24	2.79	4.31	2.75	4.46	2.81	4.59	2.71
	16	3.72	2.75	3.91	2.71	4.09	2.80	4.18	2.76	4.25	2.73	4.40	2.78	4.54	2.70
	18	3.65	2.71	3.84	2.67	4.03	2.76	4.11	2.73	4.19	2.70	4.35	2.76	4.49	2.68
	20	3.57	2.66	3.76	2.63	3.96	2.73	4.05	2.70	4.13	2.66	4.29	2.74	4.43	2.66
	22	3.49	2.62	3.68	2.59	3.89	2.69	3.98	2.67	4.06	2.64	4.23	2.72	4.38	2.63
	24	3.40	2.57	3.59	2.54	3.81	2.66	3.91	2.64	3.99	2.61	4.17	2.69	4.32	2.62
	26	3.32	2.52	3.51	2.50	3.74	2.63	3.84	2.61	3.92	2.58	4.11	2.67	4.26	2.59
	28	3.23	2.48	3.42	2.46	3.66	2.59	3.77	2.58	3.85	2.55	4.04	2.64	4.20	2.56
	30	3.14	2.43	3.33	2.41	3.58	2.55	3.70	2.55	3.78	2.51	3.98	2.60	4.13	2.54
	32	3.05	2.39	3.24	2.37	3.50	2.52	3.62	2.51	3.70	2.48	3.91	2.58	4.06	2.52
	34	2.95	2.34	3.14	2.33	3.41	2.48	3.54	2.47	3.62	2.45	3.84	2.56	4.00	2.50
	35	2.91	2.31	3.10	2.30	3.37	2.46	3.50	2.46	3.58	2.44	3.80	2.54	3.96	2.48
	36	2.86	2.29	3.05	2.28	3.33	2.44	3.46	2.44	3.54	2.42	3.76	2.53	3.92	2.47
	38	2.76	2.24	2.95	2.23	3.24	2.40	3.38	2.40	3.46	2.37	3.69	2.50	3.85	2.45
	39	2.71	2.21	2.90	2.21	3.20	2.38	3.33	2.38	3.42	2.36	3.65	2.49	3.81	2.43

Heat Mode

Air flow	outdoor air temp.	indoor air temp				
		16°CDB	18°CDB	20°CDB	22°CDB	24°CDB
Hi 11.0 (m^3/min)	-15°CWB	2.46	2.41	2.35	2.30	2.25
	-10°CWB	2.79	2.74	2.70	2.63	2.58
	-5°CWB	3.02	2.97	2.91	2.88	2.83
	0°CWB	3.16	3.12	3.06	3.02	2.98
	5°CWB	4.03	3.98	3.96	3.88	3.83
	6°CWB	4.09	4.04	4.00	3.95	3.90
	10°CWB	4.35	4.31	4.28	4.22	4.18
	15°CWB	4.73	4.69	4.66	4.61	4.56
	20°CWB	5.09	5.05	5.02	4.96	4.92

Model SRK50ZJP-S

Cool Mode

Air flow	Outdoor air temp.	Indoor air temp													
		21°CDB		23°CDB		26°CDB		27°CDB		28°CDB		31°CDB		33°CDB	
		14°CWB		16°CWB		18°CWB		19°CWB		20°CWB		22°CWB		24°CWB	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
Hi 11.0 (m^3/min)	10	5.63	4.02	5.90	3.95	6.11	4.02	6.22	3.97	6.32	3.90	6.51	3.95	6.69	3.80
	12	5.53	3.96	5.80	3.90	6.03	3.98	6.14	3.92	6.25	3.87	6.44	3.92	6.62	3.77
	14	5.43	3.90	5.70	3.84	5.94	3.93	6.05	3.87	6.16	3.82	6.37	3.88	6.55	3.73
	16	5.32	3.84	5.59	3.78	5.85	3.88	5.96	3.84	6.08	3.79	6.29	3.85	6.48	3.71
	18	5.21	3.77	5.48	3.72	5.75	3.84	5.88	3.80	5.99	3.74	6.21	3.80	6.41	3.69
	20	5.10	3.71	5.37	3.66	5.65	3.79	5.78	3.75	5.90	3.70	6.13	3.78	6.33	3.66
	22	4.98	3.64	5.25	3.60	5.55	3.74	5.69	3.71	5.80	3.66	6.05	3.74	6.25	3.63
	24	4.86	3.57	5.14	3.53	5.45	3.69	5.59	3.66	5.71	3.61	5.96	3.70	6.17	3.59
	26	4.74	3.51	5.01	3.47	5.34	3.63	5.49	3.61	5.61	3.56	5.87	3.67	6.08	3.56
	28	4.61	3.44	4.89	3.41	5.23	3.58	5.39	3.55	5.50	3.52	5.78	3.63	5.99	3.53
	30	4.49	3.37	4.76	3.34	5.11	3.52	5.28	3.51	5.40	3.47	5.68	3.59	5.90	3.49
	32	4.35	3.30	4.63	3.27	5.00	3.47	5.17	3.46	5.29	3.42	5.58	3.55	5.81	3.44
	34	4.22	3.23	4.49	3.21	4.88	3.41	5.06	3.41	5.18	3.37	5.48	3.50	5.71	3.41
	35	4.15	3.19	4.42	3.17	4.82	3.38	5.00	3.38	5.12	3.35	5.43	3.48	5.66	3.40
	36	4.08	3.15	4.35	3.14	4.76	3.35	4.94	3.36	5.06	3.32	5.37	3.46	5.61	3.38
	38	3.94	3.08	4.21	3.07	4.63	3.29	4.82	3.30	4.94	3.27	5.27	3.42	5.50	3.34
	39	3.87	3.04	4.14	3.03	4.57	3.26	4.76	3.28	4.88	3.25	5.21	3.40	5.45	3.32

Heat Mode

Air flow	outdoor air temp.	indoor air temp				
		16°CDB	18°CDB	20°CDB	22°CDB	24°CDB
Hi 13.8 (m^3/min)	-15°CWB	3.57	3.49	3.41	3.34	3.26
	-10°CWB	4.04	3.97	3.91	3.81	3.73
	-5°CWB	4.37	4.31	4.22	4.18	4.11
	0°CWB	4.59	4.52	4.44	4.39	4.32
	5°CWB	5.84	5.77	5.74	5.63	5.55
	6°CWB	5.94	5.87	5.80	5.73	5.66
	10°CWB	6.31	6.25	6.21	6.12	6.06
	15°CWB	6.86	6.80	6.76	6.68	6.62
	20°CWB	7.38	7.32	7.28	7.20	7.14

ISC09165

8. APPLICATION DATA

RKX012A314

WALL TYPE AIR CONDITIONER
R410A REFRIGERANT USED

• When install the unit, be sure to check whether the selection of installation place, power supply specifications, usage limitation (piping length, height differences between indoor and outdoor units, power supply voltage and etc.) and installation spaces.

SAFETY PRECAUTIONS

- We recommend you to read this "SAFETY PRECAUTIONS" carefully before the installation work in order to gain full advantage of the functions of the unit and to avoid malfunction due to mishandling.
- The precautions described below are divided into ⚠ **WARNING** and ⚠ **CAUTION**. The matters with possibilities leading to serious consequences such as death or serious personal injury due to erroneous handling are listed in the ⚠ **WARNING** and the matters with possibilities leading to personal injury or damage of the unit due to erroneous handling including probability leading to serious consequences in some cases are listed in ⚠ **CAUTION**. These are very important precautions for safety. Be sure to observe all of them without fail.
- Be sure to confirm no anomaly on the equipment by commissioning after completed installation and explain the operating methods as well as the maintenance methods of this equipment to the user according to the owner's manual.
- Keep the installation manual together with owner's manual at a place where any user can read at any time. Moreover if necessary, ask to hand them to a new user.
- For installing qualified personnel, take precautions in respect to themselves by using suitable protective clothing, groves, etc., and then perform the installation works.
- Please pay attention not to fall down the tools, etc. when installing the unit at the high position.
- If unusual noise can be heard during operation, consult the dealer.
- Symbols which appear frequently in the text have the following meaning:

	Observe instructions with great care		Strictly prohibited		Provide proper earthing

⚠ WARNING

- **Installation must be carried out by the qualified installer.**
  If you install the system by yourself, it may cause serious trouble such as water leaks, electric shocks, fire and personal injury, as a result of a system malfunction.
- **Install the system in full accordance with the instruction manual.**
  Incorrect installation may cause bursts, personal injury, water leaks, electric shocks and fire.
- **Be sure to use only for household and residence.**
  If this appliance is installed in inferior environment such as machine shop and etc., it can cause malfunction.
- **Use the original accessories and the specified components for installation.**
  If parts other than those prescribed by us are used, It may cause water leaks, electric shocks, fire and personal injury.
- **Install the unit in a location with good support.**
  Unsuitable installation locations can cause the unit to fall and cause material damage and personal injury.
- **Ensure the unit is stable when installed, so that it can withstand earthquakes and strong winds.**
  Unsuitable installation locations can cause the unit to fall and cause material damage and personal injury.
- **Ventilate the working area well in the event of refrigerant leakage during installation.**
  If the refrigerant comes into contact with naked flames, poisonous gas is produced.
- **When installing in small rooms, take prevention measures not to exceed the density limit of refrigerant in the event of leakage.**
  Consult the expert about prevention measures. If the density of refrigerant exceeds the limit in the event of leakage, lack of oxygen can occur, which can cause serious accidents.
- **After completed installation, check that no refrigerant leaks from the system.**
  If refrigerant leaks into the room and comes into contact with an oven or other hot surface, poisonous gas is produced.
- **Use the prescribed pipes, flare nuts and tools for R410A.**
  Using existing parts (for R22 or R407C) can cause the unit failure and serious accidents due to burst of the refrigerant circuit.
- **Tighten the flare nut by torque wrench with specified method.**
  If the flare nut were tightened with excess torque, this may cause burst and refrigerant leakage after a long period.
- **Do not open the operation valves for liquid line and gas line until completed refrigerant piping work, air tightness test and evacuation.**
  If the compressor is operated in state of opening operation valves before completed connection of refrigerant piping work, air can be sucked into refrigerant circuit, which can cause bust or personal injury due to anomalously high pressure in the refrigerant.
- **The electrical installation must be carried out by the qualified electrician in accordance with "the norm for electrical work" and "national wiring regulation", and the system must be connected to the dedicated circuit.**
  Power supply with insufficient capacity and incorrect function done by improper work can cause electric shocks and fire.
- **Be sure to shut off the power before starting electrical work.**
  Failure to shut off the power can cause electric shocks, unit failure or incorrect function of equipment.
- **Be sure to use the cables conformed to safety standard and cable ampacity for power distribution work.**
  Unconformable cables can cause electric leak, anomalous heat production or fire.
- **This appliance must be connected to main power supply by means of a circuit breaker or switch (fuse:16A) with a contact separation of at least 3mm.**
- **When plugging this appliance, a plug conforming to the norm IEC60884-1 must be used.**
- **Use the prescribed cables for electrical connection, tighten the cables securely in terminal block and relieve the cables correctly to prevent overloading the terminal blocks.**
  Loose connections or cable mountings can cause anomalous heat production or fire.
- **Arrange the wiring in the control box so that it cannot be pushed up further into the box. Install the service panel correctly.**
  Incorrect installation may result in overheating and fire.
- **Be sure to fix up the service panels.**
  Incorrect fixing can cause electric shocks or fire due to intrusion of dust or water.
- **Be sure to switch off the power supply in the event of installation, inspection or servicing.**
  If the power supply is not shut off, there is a risk of electric shocks, unit failure or personal injury due to the unexpected start of fan.
- **Stop the compressor before disconnecting refrigerant pipes in case of pump down operation.**
  If disconnecting refrigerant pipes in state of opening operation valves before compressor stopping, air can be sucked, which can cause burst or personal injury due to anomalously high pressure in the refrigerant circuit
- **Only use prescribed optional parts. The installation must be carried out by the qualified installer.**
  If you install the system by yourself, it can cause serious trouble such as water leaks, electric shocks, fire.

- **Do not put the drainage pipe directly into drainage channels where poisonous gases such as sulphide gas can occur.**
  Poisonous gases will flow into the room through drainage pipe and seriously affect the user's health and safety.
- **Ensure that no air enters in the refrigerant circuit when the unit is installed and removed.**
  If air enters in the refrigerant circuit, the pressure in the refrigerant circuit becomes too high, which can cause burst and personal injury.
- **Do not processing, splice the power cord, or share a socket with other power plugs.**
  This may cause fire or electric shock due to defecting contact, defecting insulation and over-current etc.
- **Do not bundling, winding or processing for the power cord. Or, do not deforming the power plug due to tread it.**
  This may cause fire or heating.
- **Do not vent R410A into the atmosphere : R410A is a fluorinated greenhouse gas, covered by the Kyoto Protocol with Global Warming Potential (GWP)=1975.**
- **Do not run the unit with removed panels or protections.**
  Touching rotating equipments, hot surfaces or high voltage parts can cause personal injury due to entrapment, burn or electric shocks.
- **Do not perform any change of protective device itself or its setup condition.**
  The forced operation by short-circuiting protective device of pressure switch and temperature controller or the use of non specified component can cause fire or burst.

- **Carry out the electrical work for ground lead with care.**
  Do not connect the ground lead to the gas line, water line, lightning conductor or telephone line's ground lead. Incorrect grounding can cause unit faults such as electric shocks due to short-circuiting.

⚠ CAUTION

- **Use the circuit breaker with sufficient breaking capacity.**
  If the breaker does not have sufficient breaking capacity, it can cause the unit malfunction and fire.
- **Earth leakage breaker must be installed.**
  If the earth leakage breaker is not installed, it can cause electric shocks.
- **Install isolator or disconnect switch on the power supply wiring in accordance with the local codes and regulations.**
- **Be sure to install indoor unit properly according to the instruction manual in order to run off the drainage smoothly.**
  Improper installation of indoor unit can cause dropping water into the room and damaging personal property.
- **Install the drainage pipe to run off drainage securely according to the installation manual.**
  Incorrect installation of the drainage pipe can cause dropping water into the room and damaging personal property.
- **Be sure to install the drainage pipe with descending slope of 1/100 or more, and not to make traps and air-bleedings.**
  Check if the drainage runs off securely during commissioning and ensure the space for inspection and maintenance.
- **After maintenance, all wiring, wiring ties and the like, should be returned to their original state and wiring route, and the necessary clearance from all metal parts should be secured.**
- **Secure a space for installation, inspection and maintenance specified in the manual.**
  Insufficient space can result in accident such as personal injury due to falling from the installation place.
- **Take care when carrying the unit by hand.**
  If the unit weights more than 20kg, it must be carried by two or more persons. Do not carry by the plastic straps, always use the carry handle when carrying the unit by hand. Use gloves to minimize the risk of cuts by the aluminum fins.
- **Dispose of any packing materials correctly.**
  Any remaining packing materials can cause personal injury as it contains nails and wood. And to avoid danger of suffocation, be sure to keep the plastic wrapper away from children and to dispose after tear it up.
- **For installation work, be careful not to get injured with the heat exchanger, piping flare portion or screws etc.**
- **Be sure to insulate the refrigerant pipes so as not to condense the ambient air moisture on them.**
  Insufficient insulation can cause condensation, which can lead to moisture damage on the ceiling, floor, furniture and any other valuables.
- **When perform the air conditioner operation (cooling or drying operation) in which ventilator is installed in the room. In this case, using the air conditioner in parallel with the ventilator, there is the possibility that drain water may backflow in accordance with the room lapse into the negative pressure status. Therefore, set up the opening port such as incorporate the air into the room that may appropriate to ventilation (For example; Open the door a little). In addition, just as above, so set up the opening port if the room lapse into negative pressure status due to register of the wind for the high rise apartment etc.**

- **Do not install the unit in the locations listed below.**
  - Locations where carbon fiber, metal powder or any powder is floating.
  - Locations where any substances that can affect the unit such as sulphide gas, chloride gas, acid and alkaline can occur.
  - Vehicles and ships.
  - Locations where cosmetic or special sprays are often used.
  - Locations with direct exposure of oil mist and steam such as kitchen and machine plant.
  - Locations where any machines which generate high frequency harmonics are used.
  - Locations with salty atmospheres such as coastlines.
  - Locations with heavy snow (If installed, be sure to provide base flame and snow hood mentioned in the manual).
  - Locations where the unit is exposed to chimney smoke.
  - Locations at high altitude (more than 1000m high).
  - Locations with ammonic atmospheres.
  - Locations where heat radiation from other heat source can affect the unit.
  - Locations without good air circulation.
  - Locations with any obstacles which can prevent inlet and outlet air of the unit.
  - Locations where short circuit of air can occur (in case of multiple units installation).
  - Locations where strong air blows against the air outlet of outdoor unit.

  It can cause remarkable decrease in performance, corrosion and damage of components, malfunction and fire.
- **Do not install the indoor unit in the locations listed below (Be sure to install the indoor unit according to the installation manual for each model because each indoor unit has each limitation).**
  - Locations with any obstacles which can prevent inlet and outlet air of the unit.
  - Locations where vibration can be amplified due to insufficient strength of structure.
  - Locations where the infrared receiver is exposed to the direct sunlight or the strong light beam (in case of the infrared specification unit).
  - Locations where an equipment affected by high harmonics is placed (TV set or radio receiver is placed within 1m).
  - Locations where drainage cannot run off safely.

  It can affect performance or function and etc.
- **Do not install the outdoor unit in the locations listed below.**
  - Locations where discharged hot air or operating sound of the outdoor unit can bother neighborhood.
  - Locations where outlet air of the outdoor unit blows directly to plants.
  - Locations where vibration can be amplified and transmitted due to insufficient strength of structure.
  - Locations where vibration and operation sound generated by the outdoor unit can affect seriously (on the wall or at the place near bed room).
  - Locations where an equipment affected by high harmonics is placed (TV set or radio receiver is placed within 1m).
  - Locations where drainage cannot run off safely.

  It can affect surrounding environment and cause a claim.
- **Do not install the unit near the location where leakage of combustible gases can occur.**
  If leaked gases accumulate around the unit, it can cause fire.
- **Do not install the unit where corrosive gas (such as sulfurous acid gas etc.) or combustible gas (such as thinner and petroleum gases) can accumulate or collect, or where volatile combustible substances are handled.**
  Corrosive gas can cause corrosion of heat exchanger, breakage of plastic parts and etc. And combustible gas can cause fire.
- **Do not use the indoor unit at the place where water splashes may occur such as in laundries.**
  Since the indoor unit is not waterproof, it can cause electric shocks and fire.
- **Do not install nor use the system close to the equipment that generates electromagnetic fields or high frequency harmonics.**
  Equipment such as inverters, standby generators, medical high frequency equipments and telecommunication equipments can affect the system, and cause malfunctions and breakdowns. The system can also affect medical equipment and telecommunication equipment, and obstruct its function or cause jamming.
- **Do not place any variables which will be damaged by getting wet under the indoor unit.**
  When the relative humidity is higher than 80% or drainage pipe is clogged, condensation or drainage water can drop and it can cause the damage of valuables.
- **Do not install the remote control at the direct sunlight.**
  It can cause malfunction or deformation of the remote control.
- **Do not use the unit for special purposes such as storing foods, cooling precision instruments and preservation of animals, plants or art.**
  It can cause the damage of the items.
- **Do not install the outdoor unit in a location where insects and small animals can inhabit.**
  Insects and small animals can enter the electric parts and cause damage or fire. Instruct the user to keep the surroundings clean.
- **Do not use the base flame for outdoor unit which is corroded or damaged due to long periods of operation.**
  Using an old and damage base flame can cause the unit falling down and cause personal injury.
- **Do not use any materials other than a fuse with the correct rating in the location where fuses are to be used.**
  Connecting the circuit with copper wire or other metal thread can cause unit failure and fire.
- **Do not touch any buttons with wet hands.**
  It can cause electric shocks.
- **Do not touch any refrigerant pipes with your hands when the system is in operation.**
  During operation the refrigerant pipes become extremely hot or extremely cold depending the operating condition, and it can cause burn injury or frost injury.
- **Do not touch the suction or aluminum fin on the outdoor unit.**
  This may cause injury.
- **Do not put anything on the outdoor unit and operating unit.**
  This may cause damage the objects or injury due to falling to the object.

Check before installation work

- Model name and power source
- Refrigerant piping length
- Piping, wiring and miscellaneous small parts

Standard accessories (installation kit) Accessories for indoor unit		Q'ty
①	Installation board (Attached to the rear of the indoor unit)	1
②	Wireless remote control	1
③	Remote control holder	1
④	Tapping screws (for installation board ø4 X 25mm)	5
⑤	Wood screws (for remote control holder ø3.5 X 16mm)	2
⑥	Battery [R03 (AAA, Micro) 1.5V]	2

Accessories for outdoor unit			Q'ty
⑦	Grommet (Heat pump type only)	Model 09, 12, 25, 35	1
		Model 18, 50	4
⑧	Drain elbow (Heat pump type only)		1

Option parts		Q'ty
ⓐ	Sealing plate	1
ⓑ	Sleeve	1
ⓒ	Inclination plate	1
ⓓ	Putty	1
ⓔ	Drain hose (extension hose)	1
ⓕ	Piping cover (for insulation of connection piping)	1

Necessary tools for the installation work			
1	Plus headed driver	10	Vacuum pump
2	Knife	11	Vacuum pump adapter (Anti-reverse flow type) (Designed specifically for R410A)
3	Saw	12	Gauge manifold (Designed specifically for R410A)
4	Tape measure	13	Charge hose (Designed specifically for R410A)
5	Hammer	14	Flaring tool set (Designed specifically for R410A)
6	Spanner wrench	15	Gas leak detector (Designed specifically for R410A)
7	Torque wrench [14.0~62.0N·m (1.4~6.2kgf·m)]	16	Gauge for projection adjustment (Used when flare is made by using conventional flare tool)
8	Hole core drill (65mm in diameter)	17	Pipe bender
9	Wrench key (Hexagon) [4m/m]		

SELECTION OF INSTALLATION LOCATION

(Install at location that meets the following conditions, after getting approval from the customer)

Indoor unit

○Where there is no obstructions to the air flow and where the cooled and heated air can be evenly distributed.
○A solid place where the unit or the wall will not vibrate.
○A place where there will be enough space for servicing. (Where space mentioned right can be secured)
○Where wiring and the piping work will be easy to conduct.
○The place where receiving part is not exposed to the direct rays of the sun or the strong rays of the street lighting.
○A place where it can be easily drained.
○A place separated at least 1m away from the TV or the radio. (To prevent interference to images and sounds.)
○Places where this unit is not affected by the high frequency equipment or electric equipment.
○Avoid installing this unit in place where there is much oil mist.
○Places where there is no electric equipment or household under the installing unit.

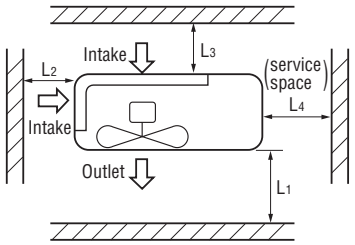
Wireless remote control

○A place where the air conditioner can be received the signal surely during operating the wireless remote control.
○Places where there is no affected by the TV and radio etc.
○Do not place where exposed to direct sunlight or near heat devices such as a stove.

Outdoor unit

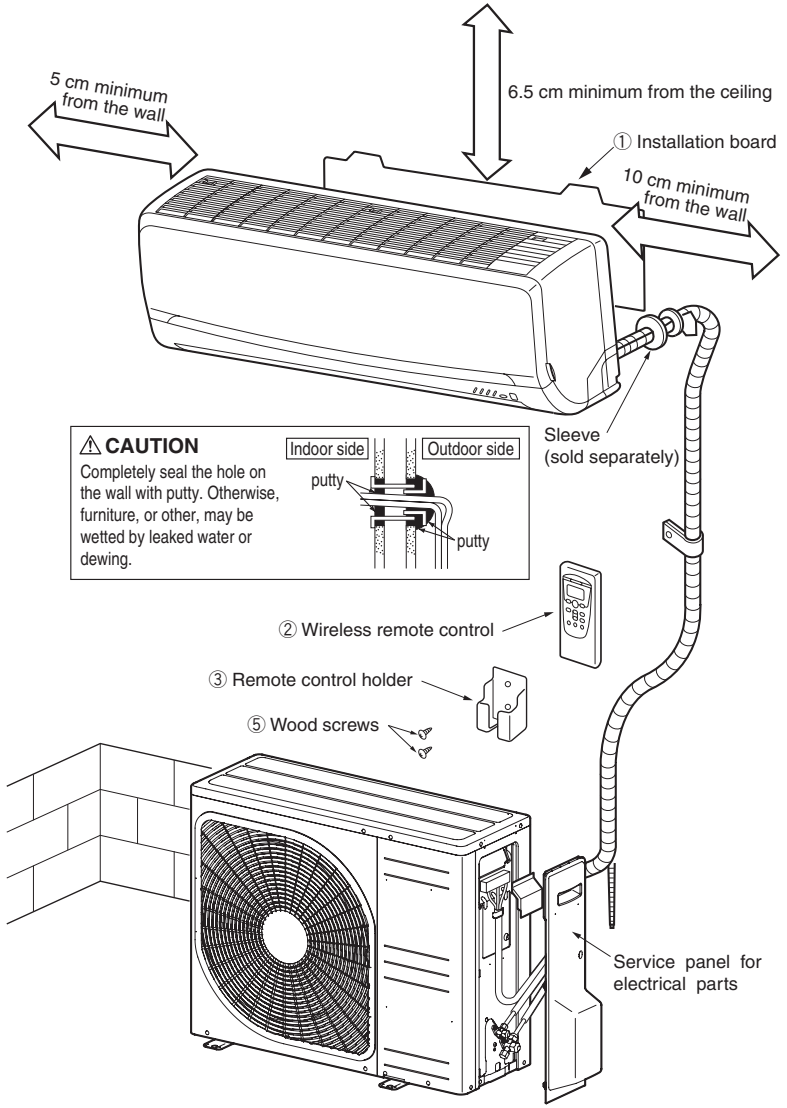
○Where air is not trapped.
○Where the installation fittings can be firmly installed.
○Where wind does not hinder the intake and outlet pipes.
○Out of the heat range of other heat sources.
○A place where stringent regulation of electric noises is applicable.
○Where it is safe for the drain water to be discharged.
○Where noise and hot air will not bother neighboring residents.
○Where snow will not accumulate.
○Where strong winds will not blow against the outlet pipe.
○When the unit is installed, the space of the following dimension and above shall be secured.
(In case the barrier is 1.2m or above in height, or is overhead, the sufficient space between the unit and wall shall be secured.)

The height of a wall is 1200mm or less.



(mm)

Example installation / Size	I	II	III	IV
L1	Open	280	280	180
L2	100	75	Open	Open
L3	100	80	80	80
L4	250	Open	250	Open



Limitation of the piping length

	Model 09, 25	Model 12, 35	Model 18, 50
Total one way length	MAX. 15m	MAX. 15m	MAX. 25m
Vertical height difference	MAX. 10m	MAX. 10m	MAX. 15m
Additional refrigerant	Less than 10m : Not required More than 10m: 20g/m	Not required	Less than 15m : Not required More than 15m: 20g/m

EARTHING WORK

○Earth work shall be carried out without fail in order to prevent electric shock and noise generation.

○The connection of the earth cable to the following substances causes dangerous failures, therefore it shall never be done.
City water pipe, Town gas pipe, TV antenna, lightning conductor, telephone line, etc.

HOW TO RELOCATE OR DISPOSE OF THE UNIT

○In order to protect the environment, be sure to pump down (recovery of refrigerant).

○Pump down is the method of recovering refrigerant from the indoor unit to the outdoor unit when the pipes are removed from the unit.

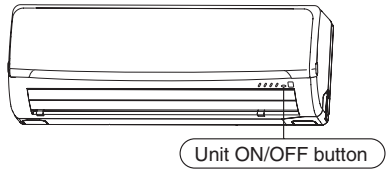
<How to pump down>

①Connect charge hose to check joint.

②Liquid side : Close the liquid valve with hexagon wrench key.
Gas side : Fully open the gas valve.
Carry out cooling operation. (If indoor temperature is low, operate forced cooling operation.)

③After low pressure gauge become 0.01MPa, stop cooling operation and close the gas valve.

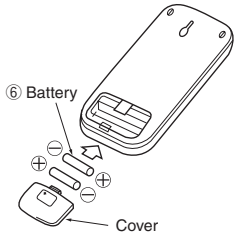
●Forced cooling operation
Turn on a power supply again after a while after turn off a power supply. Then press continually the ON/OFF button 5 seconds or more.



INSTALLATION OF WIRELESS REMOTE CONTROL

Mounting method of battery

○Uncover the wireless remote control, and mount the batteries〔R03 (AAA, Micro), ×2 pieces〕in the body regularly.
(Fit the poles with the indication marks, ⊕ & ⊖ without fail)



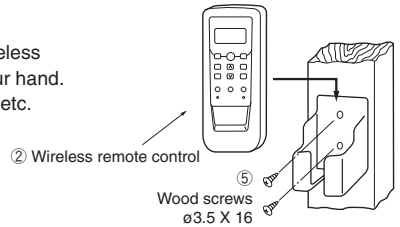
⚠ CAUTION

Do not use new and old batteries together.

Fixing to pillar or wall

○Conventionally, operate the wireless remote control by holding in your hand.

○Avoid installing it on a clay wall etc.



How to remove and install the front panel

○Removing

①Remove the 2 set screws.

②Move the lower part of the panel forward and push upwards to remove.
(Remove the 3 latches in the upper section.)

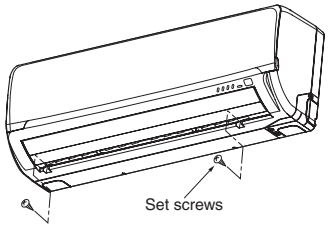
○Installing

①Remove the air filter.

②Cover the body with the front panel.

③Tighten the 2 set screws.

④Install the air filter. Carry out in the above order.



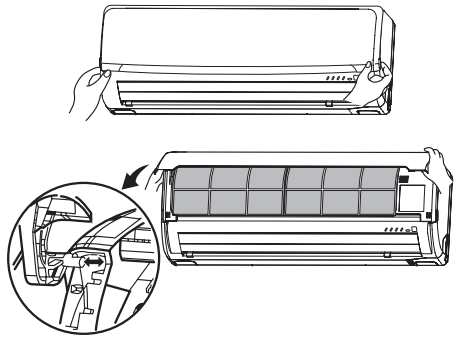
Open/close and detachment / attachment of the air inlet panel

○To open, pull the panel at both ends of lower part and release latches, then pull up the panel until you feel resistance.
(The panel stops at approx. 60˚ open position.)

○To close, hold the panel at both ends of lower part to lower downward and push it slightly until the latch works, then push the center portion slightly.

○To remove, pull up the panel to the position shown in right illustration and pull it toward you.

○To install, insert the panel arm into the slot on the front panel from the position shown in right illustration, hold the panel at both ends of lower part, lower it downward slowly, then push it slightly until the latch works and further push the center portion slightly.

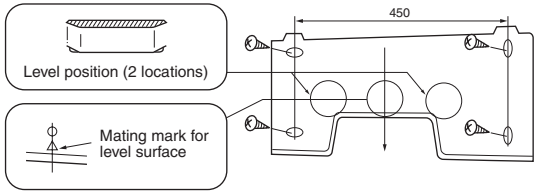


INSTALLATION OF INDOOR UNIT

Installation of Installation board

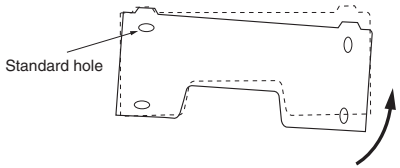
Fixing of installation board

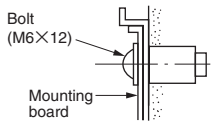
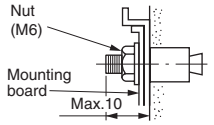
Look for the inside wall structures (Intermediate support or pillar and firmly install the unit after level surface has been checked.)



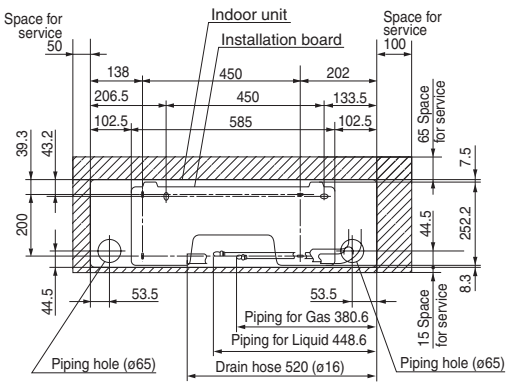
○Adjustment of the installation board in the horizontal direction is to be conducted with four screws in a temporary tightened state.

○Adjust so the board will be level by turning the board with the standard hole as the center.



Fixing on concrete wall	
Use of nut anchor	Use of bolt anchor
	

Relation between setting plate and indoor unit

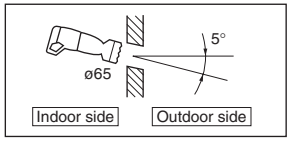


Piping for Liquid Model 09~18, 25~50 : ø6.35
Piping for Gas Model 09,12, 25, 35 : ø9.52
Model 18, 50 : ø12.7

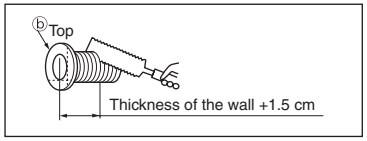
(Unit : mm)

Drilling of holes and fixture of sleeve (Option parts)

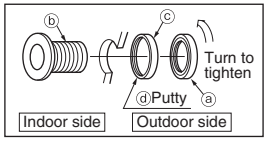
When drilling the wall that contains a metal lath, wire lath or metal plate, be sure to use pipe hole sleeve sold separately.

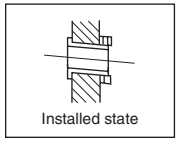


○ Drill a hole with whole core drill.



○ In case of rear piping draw out, cut off the lower and the right side portions of the sleeve collar.





Preparation of indoor unit

Mounting of connecting wires

① Remove the lid (R).
② Remove the wiring clamp.
③ Connect the connecting wire securely to the terminal block.
 1) Connect the connection wire securely to the terminal block. If the wire is not affixed completely, contact will be poor, and it is dangerous as the terminal block may heat up and catch fire.
 2) Take care not to confuse the terminal numbers for indoor and outdoor connections.
④ Fix the connecting wire by wiring clamp.
⑤ Attach the lid (R).

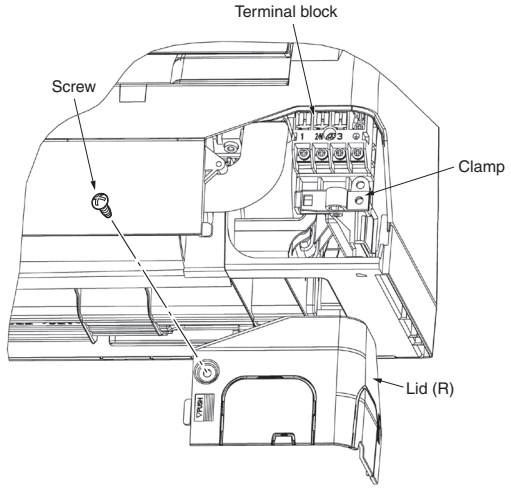
⚠ CAUTION

In case of faulty wiring connection, the indoor unit stops, and then the run lamp turns on and the timer lamp blinks.

Use cables for interconnection wiring to avoid loosening of the wires.
CENELEC code for cables Required field cables.

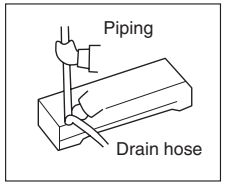
H05RNR4G1.5 (Example) or 245ICE57

H	Harmonized cable type
05	300/500 volts
R	Natural-and/or synch. rubber wire insulation
N	Polychloroprene rubber conductors insulation
R	Stranded core
4or5	Number of conductors
G	One conductor of the cable is the earth conductor (yellow/green)
1.5	Section of copper wire (mm^2)



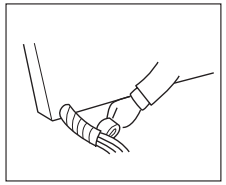
Installing the support of piping

Shaping of pipings



○Hold the bottom of the piping and fix direction before stretching it and shaping it.

Taping of the exterior

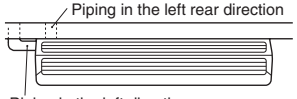
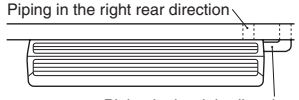


○Tape only the portion that goes through the wall.
○Always tape the wiring with the piping.

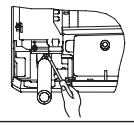
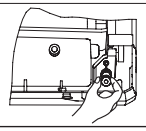
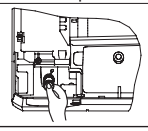
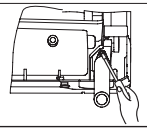
Sufficient care must be taken not to damage the panel when connecting pipes.

● Matters of special notice when piping from left or central/rear of the unit.

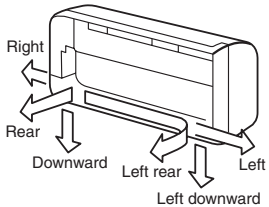
[Top view]

Left-hand-sided piping	Right-hand-sided piping
Piping in the left rear direction  Piping in the left direction	Piping in the right rear direction  Piping in the right direction

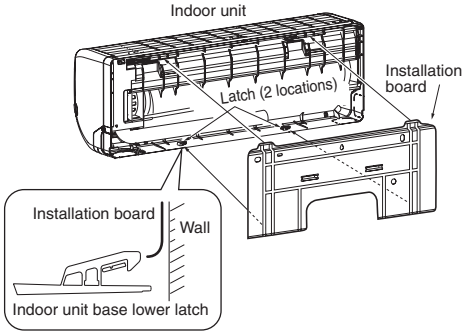
[Drain hose changing procedures]

1. Remove the drain hose.	2. Remove the drain cap.	3. Insert the drain cap.	4. Connect the drain hose.
			
○Remove the screw and drain hose, making it rotate.	○Remove it with hand or pliers.	○Insert the drain cap which was removed at procedure “2” securely using a hexagonal wrench etc. Note: Be careful that If it is not Inserted securely, water leakage may occur.	○Insert the drain hose securely, making rotate. And install the screw. Note: Be careful that If it is not Inserted securely, water leakage may occur.

Piping is possible in the rear, left, left rear, left downward, right or downward direction.



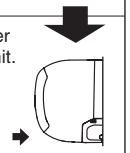
Fixing of indoor unit



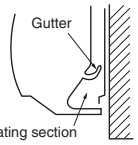
Installation Steps

①Pass the pipe through the hole in the wall, and hook the upper part of the indoor unit to the installation board.

②Gently push the lower part to secure the unit.



Since this air conditioner has been designed to collect dew drops on the rear surface to the drain pan, do not attach the power cord above the gutter.

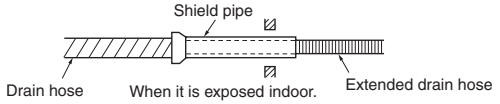


Drainage

○Arrange the drain hose in a downward angle.
○Avoid the following drain piping.

⚠ CAUTION Go through all installation steps and check if the drainage is all right. Otherwise, water leak may occur.

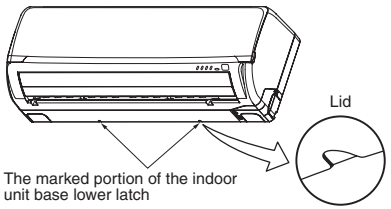
○Pour water to the drain pan located under the heat exchanger, and ensure that the water is discharged outdoor.
○When the extended drain hose is indoor, always use a shield pipe (to be arranged by the user) and ensure it is thermally insulated.



● How to remove the indoor unit from the installation board

①Push up at the marked portion of the indoor unit base lower latch, and slightly pull it toward you. (both right and left hand sides) (The indoor unit base lower latch can be removed from the installation board)

②Push up the indoor unit upward. So the indoor unit will be removed from the installation board.



INSTALLATION OF THE OUTDOOR UNIT

Fixing of outdoor

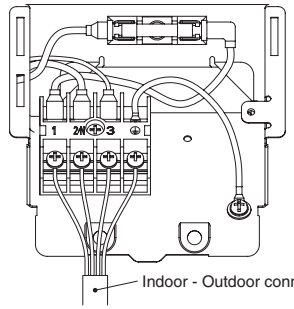
○Make sure that the unit is stable in installation. Fix the unit to stable base.

○When installing the unit at a higher place or where it could be toppled by strong winds, secure the unit firmly with foundation bolts, wire, etc.

Electric wiring work

○Perform wiring, making wire terminal numbers conform to terminal numbers of indoor unit terminal block.

○Connect using ground screw located near ⏚ mark.



Drain piping work

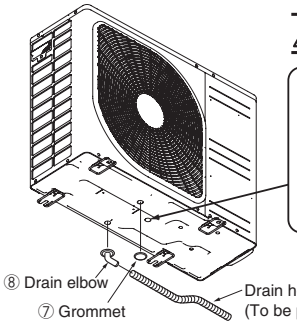
○Execute drain piping by using a drain elbow and drain grommets supplied separately as optional parts, where water drained from the outdoor unit is a problem.

○Water may drip where there is a larger amount of drain water. Seal around the drain elbow and drain grommets with putty or adequate caulking material.

○Condensed water may flow out from vicinity of operation valve or connected pipes.

○Where you are likely to have several days of sub-zero temperatures in a row, do not use a drain elbow and drain grommets. (There is a risk of drain water freezing inside and blocking the drain.)

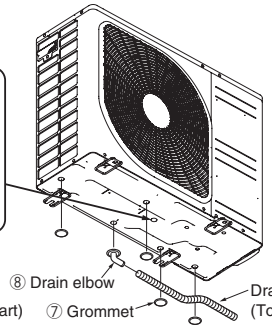
Model 09, 12, 25, 35



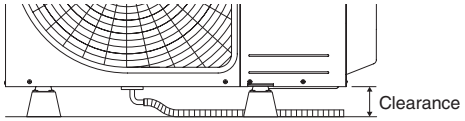
⚠ CAUTION

Do not put a grommet on this hole.
This is a supplementary drain hole to discharge drain water, when a large quantity of it is gathered.

Model 18, 50



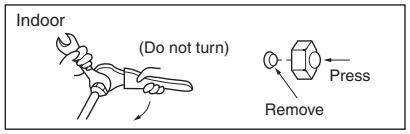
○When condensed water needs to be led to a drain, etc., install the unit on a flat base (supplied separately as an optional part) or concrete blocks. Then, please secure space for the drain elbow and the drain hose.



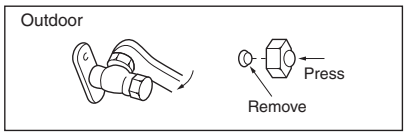
CONNECTION OF REFRIGERANT PIPINGS

Preparation

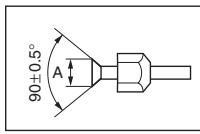
Keep the openings of the pipes covered with tapes etc. to prevent dust, sand, etc. from entering them.



○Remove the flared nuts. (on both liquid and gas sides)



○Remove the flared nuts. (on both liquid and gas sides)



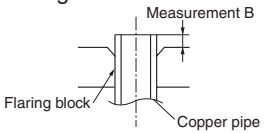
Dimension A
Liquid side : 9.1(mm)
Gas side Model 09, 12, 25, 35 : 13.2 (mm)
Model 18, 50 : 16.6 (mm)

○Install the removed flared nuts to the pipes to be connected, then flare the pipes.

⚠ CAUTION

Do not apply refrigerating machine oil to the flared surface.

● Flaring work

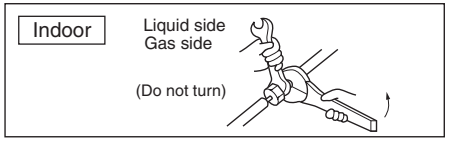


Copper pipe diameter	Measurement B (mm)		
	Clutch type flare tool for R410A	Conventional (R22) flare tool	
		Clutch type	Wing nut type
ϕ6.35	0.0 ~ 0.5	1.0 ~ 1.5	1.5 ~ 2.0
ϕ9.52	0.0 ~ 0.5	1.0 ~ 1.5	1.5 ~ 2.0
ϕ12.7	0.0 ~ 0.5	1.0 ~ 1.5	2.0 ~ 2.5

Use a flare tool designed for R410A or a conventional flare tool. Please note that measurement B (protrusion from the flaring block) will vary depending on the type of a flare tool in use. If a conventional flare tool is used, please use a copper pipe gauge or a similar instrument to check protrusion so that you can keep measurement B to a correct value.

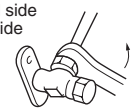
Connection

Indoor



○Connect the pipes on both liquid and gas sides.
○Tighten the nuts to the following torque.
Liquid side(φ6.35) : 14.0 ~ 18.0 N·m (1.4~1.8 kgf·m)
Gas side (φ9.52) : 34.0 ~ 42.0 N·m (3.4~4.2 kgf·m)
(φ12.7) : 49.0 ~ 61.0 N·m (4.9~6.1 kgf·m)

Outdoor



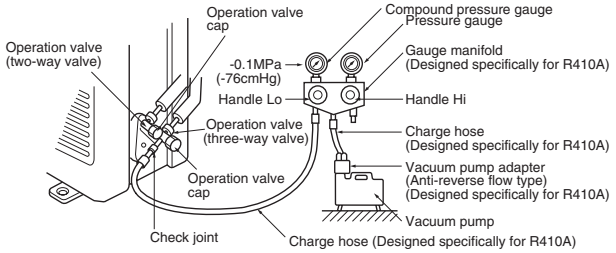
○Connect the pipes on both liquid and gas sides.
○Tighten them to the torque recommended to the indoor liquid side.

⚠ CAUTION

Do not apply excess torque to the flared nuts.
Otherwise, the flared nuts may crack depending on the conditions and refrigerant leak may occur.

Air purge

① Tighten all flare nuts in the pipings both indoor and outside wall so as not to cause leak.
② Connect operation valve, charge hose, manifold valve and vacuum pump as is illustrated right.
③ Open manifold valve handle Lo to its full width, and perform vacuum or evacuation.
Continue the vacuum or evacuation operation for 15 minutes or more and check to see that the vacuum gauge reads -0.1MPa.
④ After completing vacuum operation, close the Lo handle and stop operation of the vacuum pump.
⑤ After completing vacuum operation, fully open operation valve (Both gas and liquid sides) with hexagon headed wrench.
⑥ Check for possible leakage of gas in the connection parts of both indoor and outdoor.



Securely tighten the operation valve cap and the check joint blind nut after adjustment.

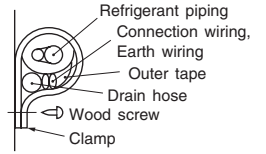
Operation valve size (mm)	Operation valve cap tightening torque (N·m)	Check joint blind nut tightening torque (N·m)
φ6.35 (1/4")	20～30	10～12
φ9.52 (3/8")		
φ12.7 (1/2")	25～35	

- Since the system uses check joints differing in diameter from those found on the conventional models, a charge hose (for R22) presently in use is not applicable.
Please use one designed specifically for R410A.
- Please use an anti-reverse flow type vacuum pump adapter so as to prevent vacuum pump oil from running back into the system.
Oil running back into an air-conditioning system may cause the refrigerant cycle to break down.

Insulation of the connection portion

Cover the coupling with insulator and then cover it with tape.

Finishing work and fixing



Cover the exterior portion with outer tape and shape the piping so it will match the contours of the route that the piping to take.
Also fix the wiring and pipings to the wall with clamps.

INSTALLATION TEST CHECK POINTS

Check the following points again after completion of the installation, and before turning on the power. Conduct a test run again and ensure that the unit operates properly.
At the same time, explain to the customer how to use the unit and how to take care of the unit following the instruction manual.

After installation

- ☐ The power supply voltage is correct as the rating.
- ☐ No gas leaks from the joints of the operation valve.
- ☐ Power cables and crossover wires are securely fixed to the terminal board.
- ☐ Operation valve is fully open.
- ☐ The pipe joints for indoor and outdoor pipes have been insulated.

Test run

- ☐ Air conditioning operation is normal.
- ☐ No abnormal noise.
- ☐ Water drains smoothly.
- ☐ Protective functions are not working.
- ☐ The remote control is normal.
- ☐ Operation of the unit has been explained to the customer.

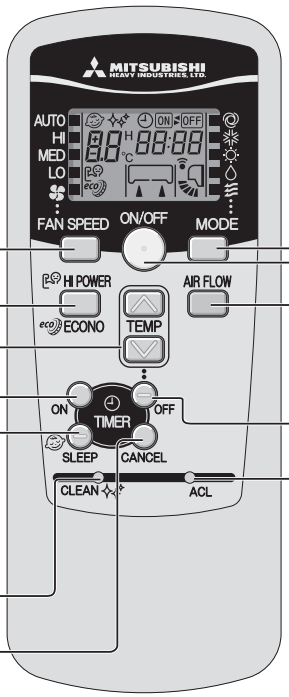
(Three-minute restart preventive timer)
When the air conditioner is restarted or when changing the operation, the unit will not start operating for approximately 3 minutes. This is to protect the unit and it is not a malfunction.

9. OUTLINE OF OPERATION CONTROL BY MICROCOMPUTER

(1) Operation control function by remote controller

Remote controller

◆ **Operation section**



FAN SPEED button
Each time the button is pressed, the ■ display is switched over in turn.

HI POWER/ECONO button
This button changes the HIGH POWER/ ECONOMY mode.

TEMPERATURE button
These buttons set the room temperature. (These buttons are used for setting the current time and timer function as well.)

ON TIMER button
This button selects ON TIMER operation.

SLEEP button
This button selects SLEEP operation.

CLEAN switch
This switch selects the CLEAN mode.

CANCEL button
This button cancels the ON timer, OFF timer, and SLEEP operation.

OPERATION MODE select button
Each time the button pressed, the ■ display is switched over in turn.

ON/OFF (luminous) button
Press to start operation, press again to stop.

AIR FLOW (UP/DOWN) button
This button changes the air flow (up/down) direction.

OFF TIMER button
This button selects OFF TIMER operation.

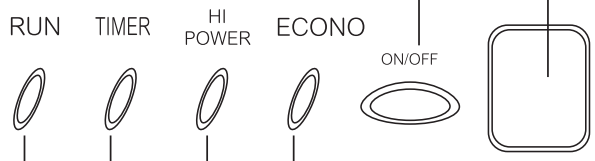
ACL switch
This switch is for resetting microcomputer and setting time.

- The above illustration shows all controls, but in practice only the relevant parts are shown.

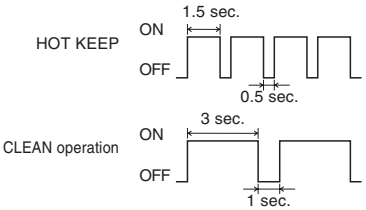
Unit display section

Remote controller signal receiver

Unit ON/OFF button
This button can be used for turning on/off the unit when remote controller is not available.



RUN (HOT KEEP) light (green)
- Illuminates during operation.
- Blinks when airflow stops due to the 'HOT KEEP' and 'CLEAN operation'.



ECONO light (green)
Illuminates during ECONOMY operation.

HI POWER light (green)
Illuminates during HIGH POWER operation.

TIMER light (yellow)
Illuminates during TIMER operation.

(2) Unit ON/OFF button

When the remote controller batteries become weak, or if the remote controller is lost or malfunctioning, this button may be used to turn the unit on and off.

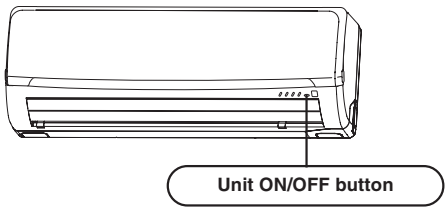
(a) Operation

Push the button once to place the unit in the automatic mode. Push it once more to turn the unit off.

(b) Details of operation

The unit will go into the automatic mode in which it automatically determines, from room temperature (as detected by sensor), whether to go into the cooling, thermal dry or heating modes.

Function / Operation mode	Room temperature setting	Fan speed	Flap	Timer switch
Cooling	About 24ºC	Auto	Auto	Continuous
Thermal dry	About 24ºC			
Heating	About 26ºC			



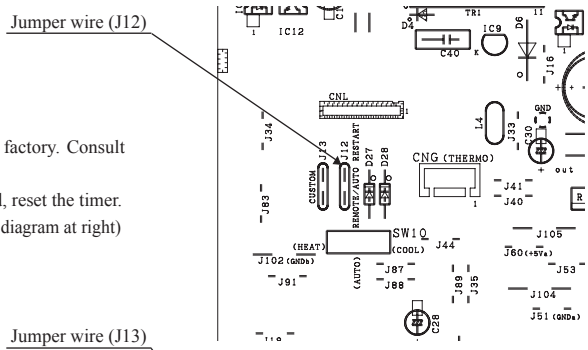
(3) Auto restart function

(a) Auto restart function records the operational status of the air-conditioner immediately prior to be switched off by a power cut, and then automatically resumes operations after the power has been restored.

(b) The following settings will be cancelled:

1) Timer settings
2) HIGH POWER operations

Notes (1) Auto restart function is set at on when the air-conditioner is shipped from the factory. Consult with your dealer if this function needs to be switched off.
(2) When power failure ocurrs, the timer setting is cancelled. Once power is resumed, reset the timer.
(3) If the jumper wire (J12) "AUTO RESTART" is cut, auto restart is disabled. (See the diagram at right)



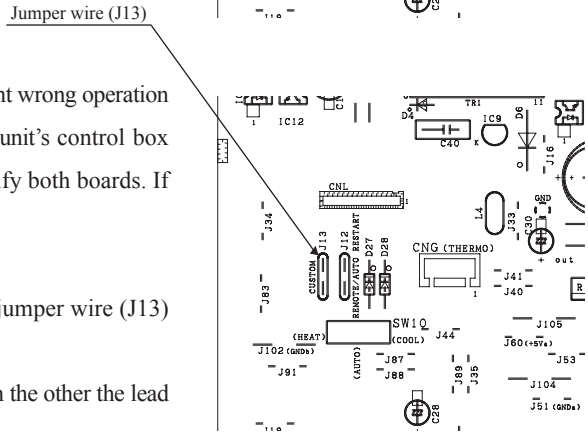
(4) Custom cord switching procedure

If two wireless remote controller are installed in one room, in order to prevent wrong operation due to mixed signals, please modify the printed circuit board in the indoor unit's control box and the remote controller using the following procedure. Be sure to modify both boards. If only one board is modified, receiving (and operation) cannot be done.

(a) Modifying the indoor unit's printed circuit board

Take out the printed circuit board from the control box and cut off jumper wire (J13) using wire cutters.

After cutting of the jumper wire, take measures to prevent contact with the other the lead wires, etc.



(b) Modifying the wireless remote controller

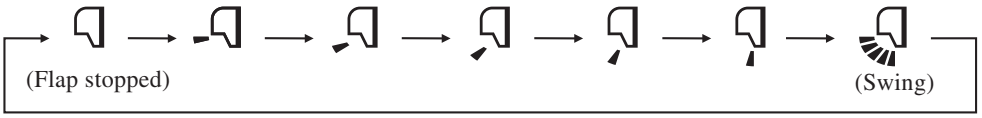
1) Remove the battery.
2) Cut the jumper wire shown in the figure at right.

(5) Flap control

Control the flap by AIRFLOW ⬍ (UP/DOWN) button on the wireless remote controller.

(a) Flap

Each time when you press the AIRFLOW ⬍ (UP/DOWN) button the mode changes as follows.

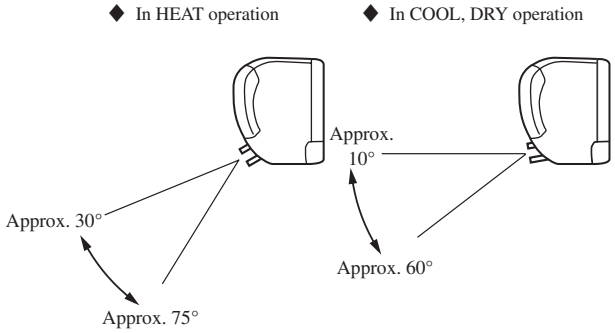


• Angle of flap from horizontal

Remote controller display					
COOL , DRY	Approx. 10°	Approx. 20°	Approx. 30°	Approx. 45°	Approx. 60°
HEAT	Approx. 20°	Approx. 35°	Approx. 50°	Approx. 60°	Approx. 75°

(b) Swing

Flap moves in upward and downward directions continuously.



(c) Memory flap

When you press the AIRFLOW (UP/DOWN) button once while the flap is operating, it stops swingingat an angle. Since this angle is memorized in the microcomputer, the flap will automatically be set at this angle when the next operation is started.

(d) When not operating

The flap returns to the position of air flow directly below, when operation has stopped.

(6) Timer operation

(a) Comfortable timer setting (ON timer)

If the timer is set at ON when the operation select switch is set at the cooling or heating, or the cooling or heating in auto mode operation is selected, the comfortable timer starts and determines the starting time of next operation based on the initial value of 15 minutes and the relationship between the room temperature at the setting time (temperature of room temperature sensor) and the setting temperature.

(b) Sleep timer operation

Pressing the SLEEP button causes the temperature to be controlled with respect to the set temperature.

(c) OFF timer operation

The Off timer can be set at a specific time (in 10-minute units) within a 24-hour period.

(7) Outline of heating operation

(a) Operation of major functional components in heating mode

	Heating			
	Thermostat ON	Thermostat OFF	Defrost	Failure
Compressor	ON	OFF	OFF	OFF
Indoor fan motor	ON	ON(HOT KEEP)	OFF	OFF
Outdoor fan motor	ON	OFF (few minutes ON)	OFF	OFF
4-way valve	ON	ON	OFF	OFF (3 minutes ON)

(b) Details of control at each operation mode (pattern)

1) Fuzzy operation

Deviation between the room temperature setting correction temperature and the suction air temperature is calculated in accordance with the fuzzy rule, and used for control of the air capacity and the compressor command speed.

Model / Fan speed	SRK25ZJP-S	SRK35ZJP-S	SRK50ZJP-S
Auto	30~115rps		30~106rps
HI	30~115rps		30~106rps
MED	30~72rps	30~84rps	30~78rps
LO	30~54rps	30~62rps	30~50rps

When the defrosting, protection device, etc. is actuated, operation is performed in the corresponding mode.

2) Hot keep operation

If the hot keep operation is selected during the heating operation, the indoor blower is controlled based on the temperature of the indoor heat exchanger (Th2) to prevent blowing of cool wind.

(c) Defrosting operation

1) Starting conditions (Defrosting operation can be started only when all of the following conditions are met.)
   a) After start of heating operation
      When it elapsed 45 minutes (model 35, 50 : 35 minutes). (Accumulated compressor operation time)
   b) After end of defrosting operation
      When it elapsed 45 minutes (model 35, 50 : 35 minutes). (Accumulated compressor operation time)
   c) Outdoor heat exchanger sensor (TH1) temperature
      When the temperature has been below –5ºC for 3 minutes continuously.
   d) The difference between the outdoor air sensor temperature and the outdoor heat exchanger sensor temperature
      - The outdoor air temperature ≧ 0°C (model 50 : -2°C) : 7°C (model 35 : 5°C, model 50 : 4°C) on higher
      - The outdoor air temperature < -15°C : -5°C or higher
   e) During continuous compressor operation
      In addition, when the speed command from the indoor controller of the indoor unit during heating operation has counted 0 rps 10 times or more and all conditions of a), b), c) and e) above and the outdoor air temperature is 3°C or less are satisfied (note that when the outdoor heat exchanger temperature for TH1 is -5°C or less: 62 rps or more, -4°C or less: less than 62 rps), defrost operation is started.
2) Ending conditions (Operation returns to the heating cycle when either one of the following is met.)
   a) Outdoor heat exchanger sensor (TH1) temperature: 13ºC or higher
   b) Continued operation time of defrosting → For more than 15 min.

(8) Outline of cooling operation

(a) Operation of major functional components in Cooling mode

	Cooling		
	Thermostat ON	Thermostat OFF	Failure
Compressor	ON	OFF	OFF
Indoor fan motor	ON	ON	ON
Outdoor fan motor	ON	OFF (few minutes ON)	OFF (few minutes ON)
4-way valve	OFF	OFF	OFF

(b) Detail of control in each mode (Pattern)

1) Fuzzy operation

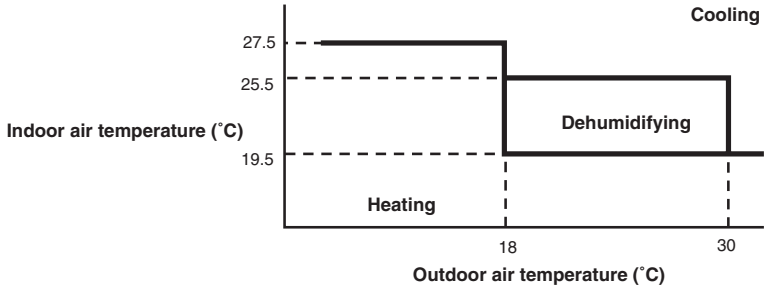
During the fuzzy operation, the air flow and the compressor command speed are controlled by calculating the difference between the room temperature setting correction temperature and the suction air temperature.

Model / Fan speed	SRK25ZJP-S	SRK35ZJP-S	SRK50ZJP-S
Auto	20~74rps	20~98rps	23~96rps
HI	20~74rps	20~98rps	23~96rps
MED	20~52rps	20~74rps	23~62rps
LO	20~38rps	20~46rps	23~38rps

(9) Outline of automatic operation

(a) Determination of operation mode

The unit checks the indoor air temperature and the outdoor air temperature, determines the operation mode, and then begins in the automatic operation.



(b) The unit checks the temperature every hour after the start of operation and, if the result of check is not same as the previous operation mode, changes the operation mode.

(c) When the unit is started again within one hour after the stop of automatic operation or when the automatic operation is selected during heating, cooling or dehumidifying operation, the unit is operated in the previous operation mode.

(d) Setting temperature can be adjusted within the following range. There is the relationship as shown below between the signals of the wireless remote controller and the setting temperature.

		Signals of wireless remote controller (Display)												
		–6	–5	–4	–3	–2	–1	±0	+1	+2	+3	+4	+5	+6
Setting temperature	Cooling	18	19	20	21	22	23	24	25	26	27	28	29	30
	Dehumidifying	19	20	21	22	23	24	25	26	27	28	29	30	31
	Heating	20	21	22	23	24	25	26	27	28	29	30	31	32

(10) Protective control function

(a) Frost prevention for indoor heat exchanger (During cooling or dehumidifying)

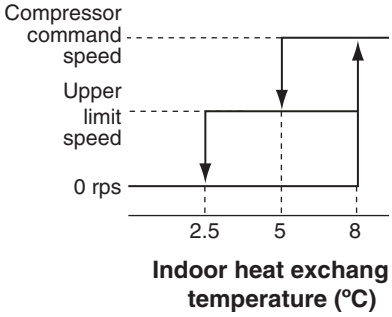
1) Operating conditions

a) Indoor heat exchanger temperature (Th2) is lower than 5ºC.

b) 8 minutes after reaching the compressor command speed except 0 rps.

2) Detail of anti-frost operation

Item \ Indoor heat exchanger temperature	5°C or lower	2.5°C or lower
Upper limit speed	model 25 : 44 rps model 35 : 70 rps model 50 : 76 rps	0rps
Indoor fan	Depends on operation mode	Protects the fan tap just before frost prevention control
Outdoor fan	Depends on operation mode	Depends on stop mode
4-way valve	OFF	



3) Reset conditions: The indoor heat exchanger temperature (Th2) is 8ºC or higher after 5 minutes of operation following control of the compressor command speed upper is 0 rps.

(b) Cooling overload protective control

1) Operating conditions: When the outdoor unit is operating with the compressor command speed of other than 0 rps, and when the outdoor air temperature sensor (TH2) becomes 41ºC or over for 30 seconds continuously.

2) Detail of operation

a) Outdoor fan is stepped up by 3 speed step. (Upper limit speed is 7th speed.)

b) The lower limit of compressor command speed is set to 30 rps and even if the calculated result becomes lower than that after fuzzy calculation, the speed is kept to 30 rps. However, when the thermo becomes OFF, the speed is reduced to 0 rps.

3) Reset conditions: When either of the following condition is satisfied.

a) When the outdoor air temperature becomes 40ºC or less.

b) When the compressor command speed is 0rps.

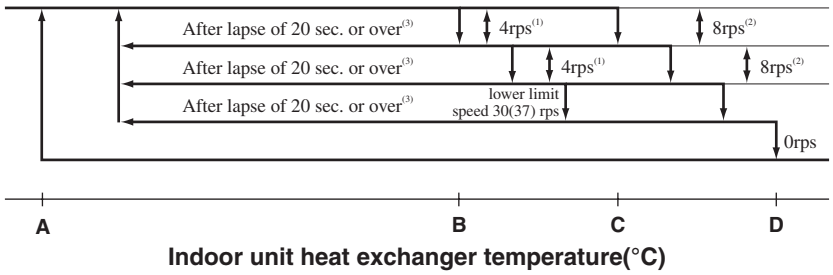
(c) Heating high pressure control

1) Purpose: Prevents anomalous high pressure operation during heating.

2) Detector: Indoor heat exchanger sensor (Th2)

3) Detail of operation:

(Example) Fuzzy



Notes (1) When the indoor heat exchanger temperature is in the range of B~C ºC, the speed is reduced by 4 rps at each 20 seconds.
(2) When the indoor heat exchanger temperature is in the range of C~D ºC, the speed is reduced by 8 rps at each 20 seconds. When the temperature is D ºC or over for 1 minute continuously, the compressor is stopped.
(3) When the indoor heat exchanger temperature is in the range of A~B ºC, if the compressor command speed is been maintained and the operation has continued for more than 20 seconds at the same speed, it returns to the normal heating operation.
(4) Indoor blower retains the fan tap when it enters in the high pressure control. Outdoor blower is operated in accordance with the speed.
(5) Value in ( ) are for the model 18.

- **Temperature list**

Model 25.35 Unit : ºC

	A	B	C	D
RPSmin < 50	48	53	55	58
50 ≦ RPSmin < 91	48.5	56	58	61
91 ≦ RPSmin < 97	48.5	56~53	58	61
97 ≦ RPSmin < 100	48.5	53~51	58~56	61
100 ≦ RPSmin < 115	48.5~40.1	51~42	56~47.3	61
115 ≦ RPSmin	40.1	42	47.3	61

Model 50

	A	B	C	D
RPSmin < 40	49	54	55	58
40 ≦ RPSmin < 80	53	58	59	62
80 ≦ RPSmin < 90	53~44	58~48	59~50	62~58
90 ≦ RPSmin < 102	44~33.5	48~38.5	50~39.5	58~54
102 ≦ RPSmin	33.5	38.5	39.5	54

Notes (1) RPSmin: The lower one between the compressor command speed

(d) Heating overload protective control

1) Operating conditions: When the unit is operating with the compressor command speed other than 0 rps or when the outdoor air temperature sensor (TH2) rose beyond 22(11 or 22)ºC for 30 seconds continuously.

2) Detail of operation:

a) Taking the upper limit of control speed range at 60(78 or 51) rps, if the output speed obtained with the fuzzy calculation exceeds the upper limit, the upper limit value is maintained.

b) The lower limit of control speed is set to 40(30) rps and even if the calculated result becomes lower than that after fuzzy calculation, the speed is kept to 40(30) rps. However, when the thermo becomes OFF, the speed is reduced to 0 prs.

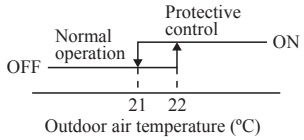
c) Inching prevention control is activated and inching prevention control is carried out with the minimum speed set at 40 (30) rps.

d) The outdoor fan is set on speed.

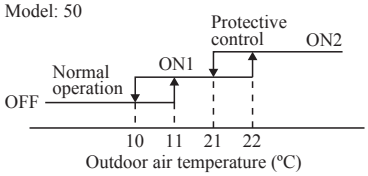
・Models 25, 35…2nd speed.

・Model 50……ON1: It depends on the compressor command speed.
ON2: 2nd speed.

Models: 25, 35



Model: 50



	ON1	ON2
Compressor command speed	78rps	51rps
Outdoor air temperature	11ºC	22ºC

3) Reset conditions: When the outdoor air temperature drops below 21(10)ºC.

Note (1) Values in ( ) are for the model 50.

(e) Heating low outdoor temperature protective control

(i) Protective control I

1) Operating conditions: When the outdoor air temperature sensor (TH2) is -2(4)ºC or lower continues for 30 seconds while the compressor command is other than 0 rps.

2) Detail of operation:

a) When the compressor command speed is less than 40(29) rps, the compressor command speed is forcibly set at 40(29) rps. However, when the thermo becomes OFF, the speed is reduced 0 rps.

b) Inching prevention control is activated and inching prevention control is carried out with the minimum speed set at 40 (29) rps.

3) Reset conditions: When the either of the following condition is satisfied.

a) When the outdoor air temperature sensor (TH2) becomes 2(6)ºC or higher.

b) When the compressor command speed is 0 rps.

Note (1) Values in ( ) are for the model 50.

(ii) Protective control II

1) Operating conditions: When the outdoor air temperature sensor (TH2) is 0ºC or lower continuously for 30 seconds while the compressor command speed is other than 0 rps.

2) Detail of operation: The outdoor fan motor speed is stepped up by 2 speed step. (Upper limit 7th speed)

3) Reset conditions: When the either of the following condition is satisfied.

a) When the outdoor air temperature sensor (TH2) becomes 2ºC or higher.

b) When the compressor command speed is 0 rps.

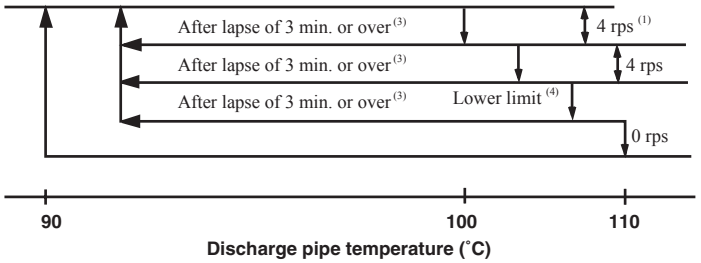
(f) Compressor overheat protection

1) Purpose: It is designed to prevent deterioration of oil, burnout of motor coil and other trouble resulting from the compressor overheat.

2) Detail of operation

a) Speeds are controlled with temperature detected by the sensor mounted on the discharge pipe.

(Example) Fuzzy



Notes (1) When the discharge pipe temperature is in the range of 100 to 110ºC, the speed is reduced by 4 rps.

(2) When the discharge pipe temperature is raised and continues operation for 20 seconds without changing, then the speed is reduced again by 4 rps.

(3) If the discharge pipe temperature is still 90ºC or greater but less than 100ºC even when the compressor command speed is maintained for 3 minutes when the temperature is 90ºC or greater but less than 100ºC, the speed is raised by 2 rps and kept at that speed for 3 minutes. This process is repeated until the compressor command speed is reached.

(4) Lower limit speed

	Cooling	Heating
Models 25, 35	20 rps	30 rps
Model 50	24 rps	29 rps

b) If the temperature of 110ºC is detected by the sensor on the discharge pipe, then the compressor will stop immediately. When the discharge pipe temperature drops and the time delay of 3 minutes is over, the unit starts again within 1 hour but there is no start at the third time.

(g) Current safe

1) Purpose: Current is controlled not to exceed the upper limit of the setting operation current.

2) Detail of operation: Input current to the converter is monitored with the current sensor fixed on the printed circuit board of the outdoor unit and, if the operation current value reaches the limiting current value, the compressor command speed is reduced.

If the mechanism is actuated when the speed of compressor command is less than 30 rps, the compressor is stopped immediately. Operation starts again after a delay time of 3 minutes.

(h) Current cut

1) Purpose: Inverter is protected from overcurrent.

2) Detail of operation: Output current from the converter is monitored with a shunt resistor and, if the current exceeds the setting value, the compressor is stopped immediately. Operation starts again after a delay time of 3 minutes.

(i) Outdoor unit failure

This is a function for determining when there is trouble with the outdoor unit during air conditioning.
The compressor is stopped if any one of the following in item 1), 2) is satisfied. Once the unit is stopped by this function, it is not restarted.

1) When the input current is measured at 1 A or less for 3 continuous minutes or more.
2) If the compressor command sends a 0 rps signal to the indoor unit 3 times or more within 20 minutes of the power being turned on.

(j) Inching prevention

When the compressor goes into the thermo operation within 10(5) minutes since operation start or becomes various dehumidifying operations, the operation is continued with the lower limit speed forcibly.

Note (1) Values in ( ) are for the model 50.

(k) Indoor fan motor protection

When the air conditioner is operating and the indoor fan motor is turned ON, if the indoor fan motor has operated at 300 rpm or under for more than 30 seconds, the unit enters first in the stop mode and then stops the entire system.

(l) Serial signal transmission error protection

1) Purpose: Prevents malfunction resulting from error on the indoor ↔ outdoor signals.

2) Detail of operation

a) When the outdoor unit controller cannot receive signals from the indoor unit

If the compressor is operating and a serial signal cannot be received from the indoor control with outdoor control having serial signals continuously for 1 minute and 55 seconds, the compressor is stopped.

After the compressor has been stopped, it will be restarted after the compressor start delay if a serial signal can be received again from the indoor control.

b) When the indoor unit controller cannot receive signals from the outdoor unit

i) If the outdoor unit inverter signals cannot be received for 10 seconds continuously during the transfer error check at the first time after turning on the power supply, the compressor is stopped immediately.

ii) If the outdoor unit inverter signals cannot be received for 1 minute and 50 seconds continuously, it tries to restart two time but stops the operation at third failure of restart.

(m) Rotor lock

If the motor for the compressor does not turn after it has been started, it is determined that a compressor lock has occurred and the compressor is stopped.

(n) Outdoor fan motor protection

If the outdoor fan motor has operated at 75rpm or under for more than 30 seconds, the compressor and fan motor are stopped.

10. MAINTENANCE DATA

(1) Cautions

(a) If you are disassembling and checking an air conditioner, be sure to turn off the power before beginning. When working on indoor units, let the unit sit for about 1 minute after turning off the power before you begin work. When working on an outdoor unit, there may be an electrical charge applied to the main circuit (electrolytic condenser), so begin work only after discharging this electrical charge (to DC 10 V or lower).

(b) When taking out printed circuit boards, be sure to do so without exerting force on the circuit boards or package components.

(c) When disconnecting and connecting connectors, take hold of the connector housing and do not pull on the lead wires.

(2) Items to check before troubleshooting

(a) Have you thoroughly investigated the details of the trouble which the customer is complaining about?

(b) Is the air conditioner running? Is it displaying any self-diagnosis information?

(c) Is a power supply with the correct voltage connected?

(d) Are the control lines connecting the indoor and outdoor units wired correctly and connected securely?

(e) Is the outdoor unit's service valve open?

(3) Troubleshooting procedure (If the air conditioner does not run at all)

If the air conditioner does not run at all, diagnose the trouble using the following troubleshooting procedure. If the air conditioner is running but breaks down, proceed to troubleshooting step (4).

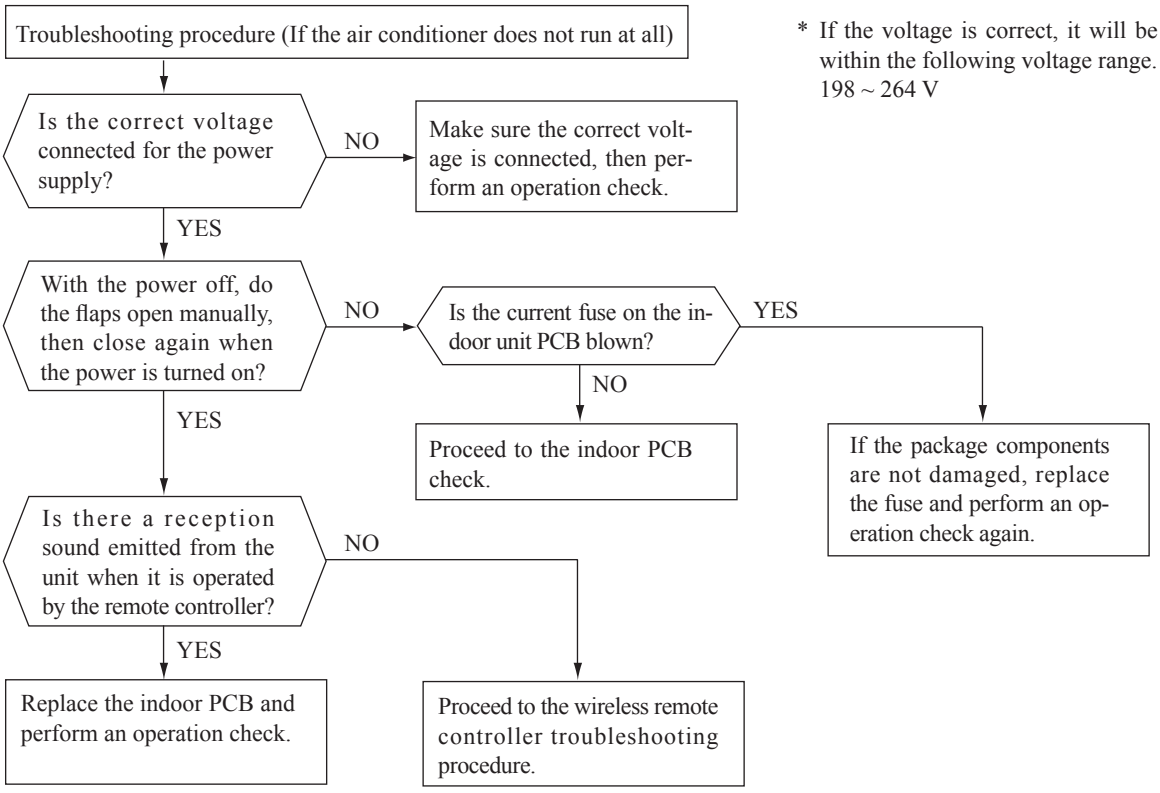
Important When all the following conditions are met, we say that the air conditioner will not run at all.

(a) The RUN light does not light up.

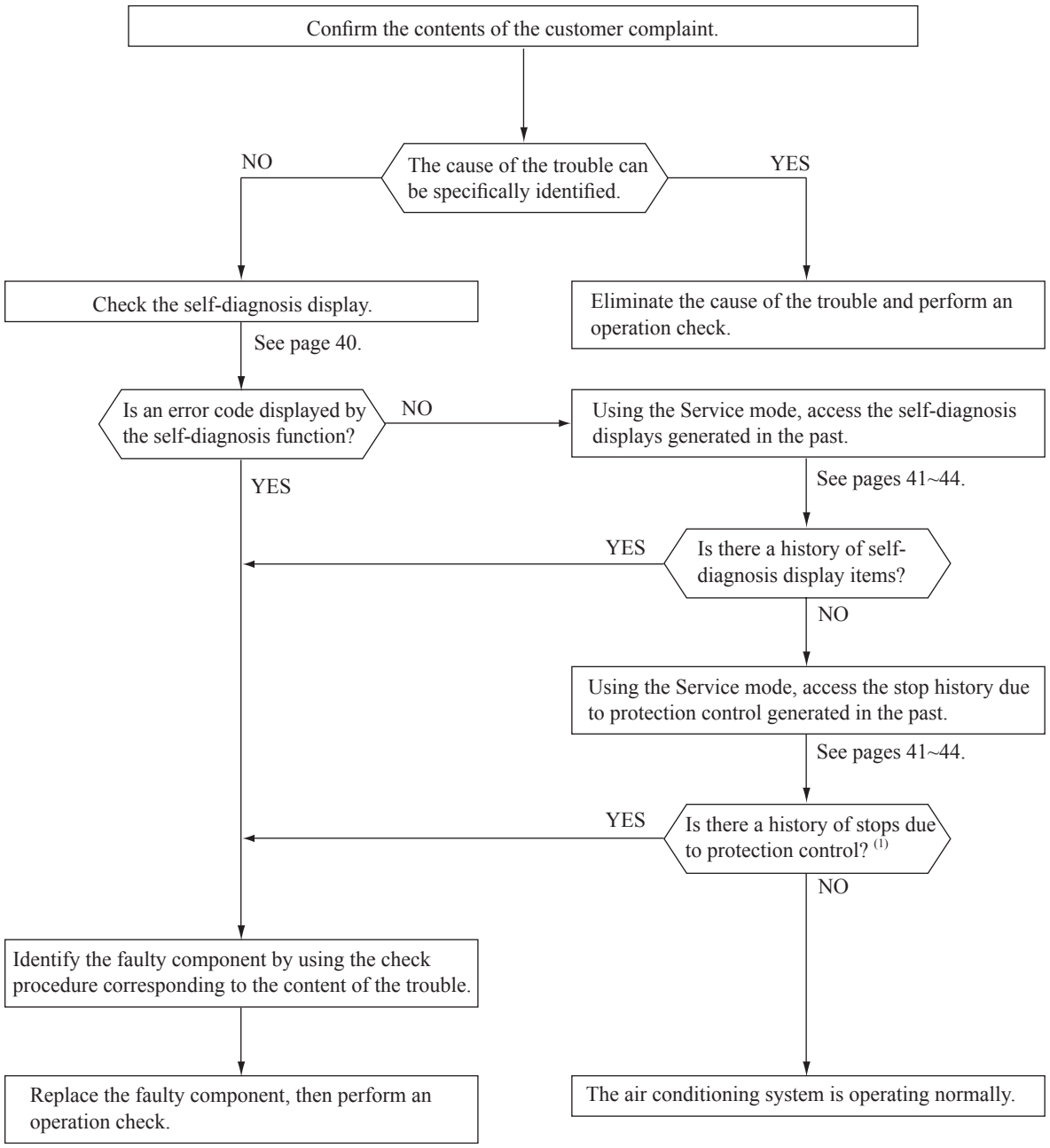
(b) The flaps do not open.

(c) The indoor unit fan motors do not run.

(d) The self-diagnosis display does not function.



(4) Troubleshooting procedure (If the air conditioner runs)



Note (1) Even in cases where only intermittent stop data are generated, the air conditioning system is normal. However, if the same protective operation recurs repeatedly (3 or more times), it will lead to customer complaints. Judge the conditions in comparison with the contents of the complaints.

(5) Self-diagnosis table

When this air conditioner performs an emergency stop, the reason why the emergency stop occurred is displayed by the flashing of display lights. If the air conditioner is operated using the remote controller 3 minutes or more after the emergency stop, the trouble display stops and the air conditioner resumes operation. (1)

Indoor unit display panel		Description of trouble	Cause	Display (flashing) condition
RUN light	TIMER light			
1 time flash	ON	Heat exchanger sensor error	• Broken heat exchanger sensor wire, poor connector connection • Indoor PCB is faulty	When a heat exchanger sensor wire disconnection is detected while operation is stopped. (If a temperature of –20ºC or lower is detected for 15 seconds, it is judged that the wire is disconnected.) (Not displayed during operation.)
2 time flash	ON	Room temperature sensor error	• Broken room temperature sensor wire, poor connector connection • Indoor PCB is faulty	When a room temperature sensor wire disconnection is detected while operation is stopped. (If a temperature of –20ºC or lower is detected for 15 seconds, it is judged that the wire is disconnected.) (Not displayed during operation.)
6 time flash	ON	Indoor fan motor error	• Defective fan motor, poor connector connection	When conditions for turning the indoor unit's fan motor on exist during air conditioner operation, an indoor unit fan motor speed of 300 rpm or lower is measured for 30 seconds or longer. (The air conditioner stops.)
Keeps flashing	1 time flash	Outdoor air temperature sensor error	• Broken outdoor air temp. sensor wire, poor connector connection • Outdoor PCB is faulty	When an outdoor temperature sensor wire disconnection is detected while operation is stopped. (If a temperature of –40ºC or lower is detected for 15 seconds, it is judged that the wire is disconnected.) (The compressor is stopped.)
Keeps flashing	2 time flash	Outdoor heat exchanger sensor error	• Broken heat exchanger sensor wire, poor connector connection • Outdoor PCB is faulty	When a sensor wire disconnection is detected while operation is stopped. (If a temperature of –50ºC or lower is detected for 15 seconds, it is judged that the wire is disconnected.) (The compressor is stopped.)
Keeps flashing	4 time flash	Discharge pipe sensor error	• Broken discharge pipe sensor wire, poor connector connection • Outdoor PCB is faulty	When a compressor discharge pipe sensor wire disconnection is detected for 15 seconds or longer (less than 7ºC) after the compressor command speed has continued at 0 rps or higher for 9 minutes. (The compressor is stopped.)
ON	1 time flash	Current Cut	• Compressor locking, open phase on compressor output, shortcircuit on power transistor, closed service valve	The inverter output current (compressor motor current) exceeds the set value during compressor start. (The air conditioner stops.)
ON	2 time flash	Trouble of outdoor unit	• Broken compressor wire • Compressor blockage	When there is an emergency stop caused by trouble in the outdoor unit, or the input current value is found to be lower than the set value. (The air conditioner stops.)
ON	3 time flash	Current safe stop	• Overload operation • Overcharge • Compressor locking	When the compressor command speed is lower than the set value and the current safe has operated. (The compressor is stopped.)
ON	4 time flash	Power transistor error	• Broken power transistor	When there is an emergency stop caused by trouble in the outdoor unit, or the input current value is found to be lower than the set value continuously for 3 minutes or longer. (The compressor is stopped.)
ON	5 time flash	Over heat of compressor	• Gas shortage, defective discharge pipe sensor, closed service valve	When the value of the discharge pipe sensor exceeds the set value. (The air conditioner stops.)
ON	6 time flash	Error of signal transmission	• Defective power supply, Broken signal wire, defective indoor/outdoor PCB	When there is no signal between the indoor PCB and outdoor PCB for 10 seconds or longer (when the power is turned on), or when there is no signal for 1 minute 55 seconds or longer (during operation)(the compressor is stopped).
ON	7 time flash	Outdoor fan motor error	• Defective fan motor, poor connector connection	When the outdoor unit's fan motor sped continues for 30 seconds or longer at 75 rpm or lower. (3 times) (The air conditioner stops.)
2 time flash	2 time flash	Rotor lock	• Defective compressor • Open phase on compressor • Defective outdoor PCB	If the compressor motor's magnetic pole positions cannot be correctly detected when the compressor starts. (The air conditioner stops.)
5 time flash	ON	Active filter voltage error	• Defective active filter	When the wrong voltage connected for the power supply. When the outdoor PCB is faulty.

Notes (1)The air conditioner cannot be restarted using the remote controller for 3 minutes after operation stops.

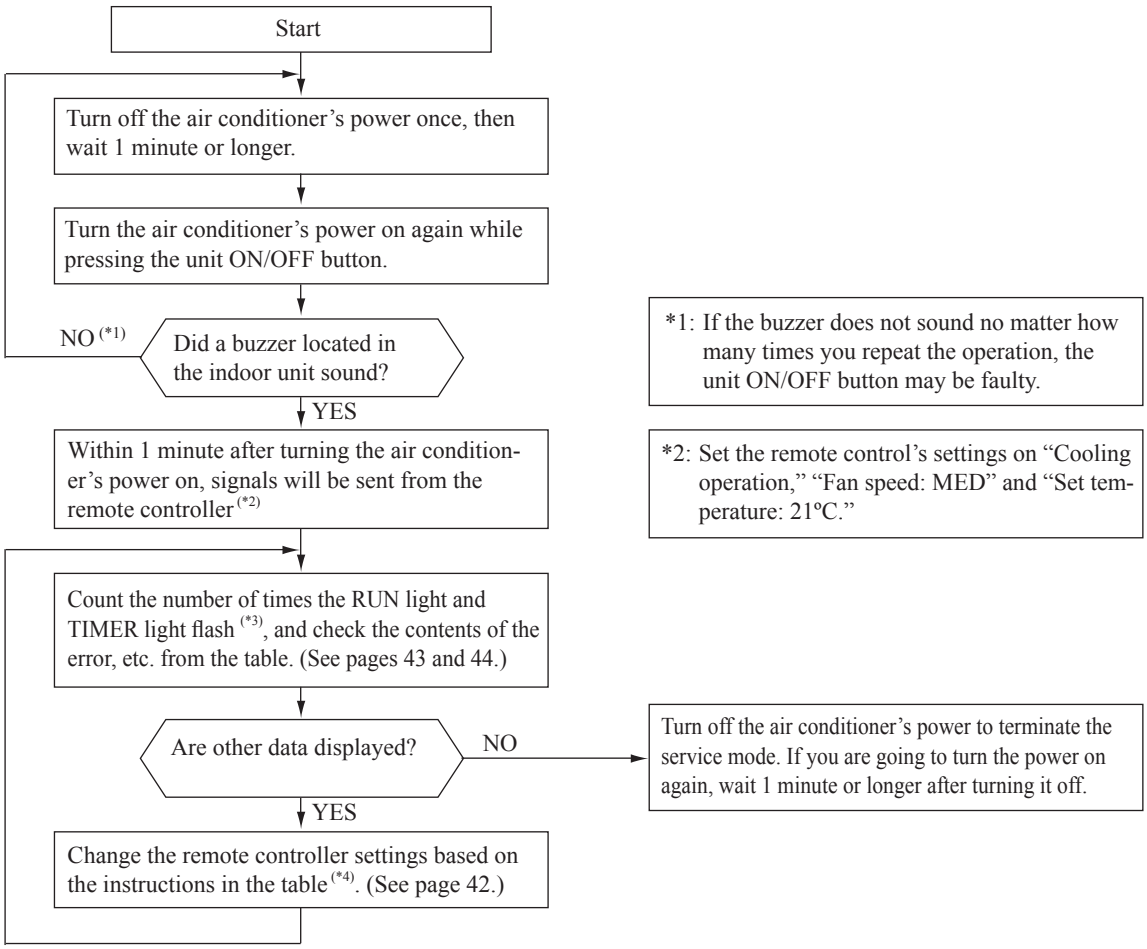
(6) Service mode (Trouble mode access function)

This air conditioner is capable of recording error displays and protective stops (service data) which have occurred in the past. If self-diagnosis displays cannot be confirmed, it is possible to get a grasp of the conditions at the time trouble occurred by checking these service data.

(a) Explanation of terms

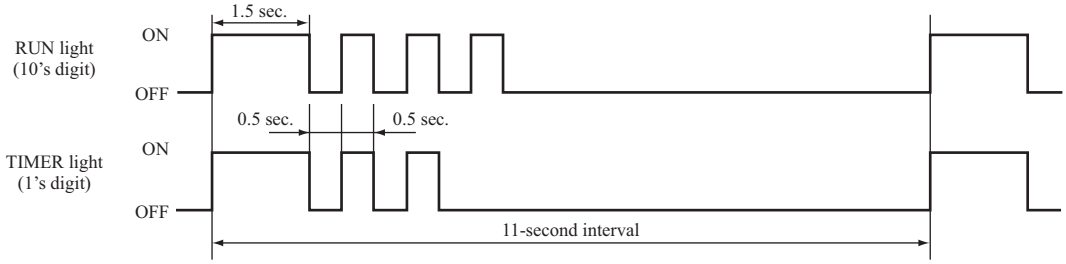
Term	Explanation
Service mode	The service mode is the mode where service data are displayed by flashing of the display lights when the operations in item (b) below are performed with the indoor controller.
Service data	These are the contents of error displays and protective stops which occurred in the past in the air conditioner system. Error display contents and protective stop data from past anomalous operations of the air conditioner system are saved in the indoor unit controller's non-volatile memory (memory which is not erased when the power goes off). There are two types of data, self-diagnosis data and stop data, described below.
Self-diagnosis data	These are the data which display the reason why a stop occurred when an error display (self-diagnosis display) occurred in an indoor unit. Data are recorded for up to 5 previous occurrences. Data which are older than the 5th previous occurrence are erased. In addition, data on the temperature of each sensor (room temperature, indoor heat exchanger, outdoor heat exchanger, outdoor air temperature, discharge pipe), remote controller information (operation switching, fan speed switching) are recorded when trouble occurs, so more detailed information can be checked.
Stop data	These are the data which display the reason by a stop occurred when the air conditioning system performed protective stops, etc. in the past. Even if stop data alone are generated, the system restarts automatically. (After executing the stop mode while the display is normal, the system restarts automatically.) Data for up to 10 previous occasions are stored. Data older than the 10th previous occasion are erased. (Important) In cases where transient stop data only are generated, the air conditioner system may still be normal. However, if the same protective stop occurs frequently (3 or more times), it could lead to customer complaints.

(b) Service mode display procedure



*3: To count the number of flashes in the service mode, count the number of flashes after the light lights up for 1.5 second initially (start signal). (The time that the light lights up for 1.5 second (start signal) is not counted in the number of flashes.)

• In the case of current safe (heating CT1) (example: stop code "32")
The RUN light (10's digit) flashes 3 times and the TIMER light (1's digit) flashes 2 times.
$3 \times 10 + 2 \times 1 = 32 \rightarrow$ From the table, read the instructions for error code 32, "current safe (heating CT1).



*4: When in the service mode, when the remote controller settings (operation switching, fan speed switching, temperature setting) are set as shown in the following table and sent to the air conditioner unit, the unit switches to display of service data.

① **Self-diagnosis data**

What are Self-diagnosis Data? ..... These are control data (reasons for stops, temperature at each sensor, remote controller information) from the time when there were error displays (abnormal stops) in the indoor unit in the past.

Data from up to 5 previous occasions are stored in memory. Data older than the 5th previous occasion are erased. The temperature setting indicates how many occasions previous to the present setting the error display data are and the operation switching and fan speed switching data show the type of data.

Remote controller setting		Contents of output data
Operation switching	Fan speed switching	
Cooling	MED	Displays the reason for stopping display in the past (error code).
	HI	Displays the room temperature sensor temperature at the time the error code was displayed in the past.
	AUTO	Displays the indoor heat exchanger sensor temperature at the time the error code was displayed in the past.
Heating	LO	Displays the remote controller information at the time the error code was displayed in the past.
	MED	Displays the outdoor air temperature sensor temperature at the time the error code was displayed in the past.
	HI	Displays the outdoor heat exchanger sensor temperature at the time the error code was displayed in the past.
	AUTO	Displays the discharge pipe sensor temperature at the time the error code was displayed in the past.

Remote controller setting	Indicates the number of occasions previous to the present the error display data are from.
Temperature setting	
21ºC	1 time previous (previous time)
22ºC	2 times previous
23ºC	3 times previous
24ºC	4 times previous
25ºC	5 times previous

(Example)

Remote controller setting			Displayed data
Operation switching	Fan speed switching	Temperature setting	
Cooling	MED	21ºC	Displays the reason for the stop (error code) the previous time an error was displayed.
		22ºC	Displays the reason for the stop (error code) 2 times previous when an error was displayed.
		23ºC	Displays the reason for the stop (error code) 3 times previous when an error was displayed.
		24ºC	Displays the reason for the stop (error code) 4 times previous when an error was displayed.
		25ºC	Displays the reason for the stop (error code) 5 times previous when an error was displayed.

② **Stop data**

Remote controller setting			Displayed data
Operation switching	**Fan speed switching**	**Temperature setting**	
Cooling	LO	21ºC	Displays the reason for the stop (stop code) the previous time when the air conditioner was stopped by protective stop control.
		22ºC	Displays the reason for the stop (stop code) 2 times previous when the air conditioner was stopped by protective stop control.
		23ºC	Displays the reason for the stop (stop code) 3 times previous when the air conditioner was stopped by protective stop control.
		24ºC	Displays the reason for the stop (stop code) 4 times previous when the air conditioner was stopped by protective stop control.
		25ºC	Displays the reason for the stop (stop code) 5 times previous when the air conditioner was stopped by protective stop control.
		26ºC	Displays the reason for the stop (stop code) 6 times previous when the air conditioner was stopped by protective stop control.
		27ºC	Displays the reason for the stop (stop code) 7 times previous when the air conditioner was stopped by protective stop control.
		28ºC	Displays the reason for the stop (stop code) 8 times previous when the air conditioner was stopped by protective stop control.
		29ºC	Displays the reason for the stop (stop code) 9 times previous when the air conditioner was stopped by protective stop control.
		30ºC	Displays the reason for the stop (stop code) 10 times previous when the air conditioner was stopped by protective stop control.

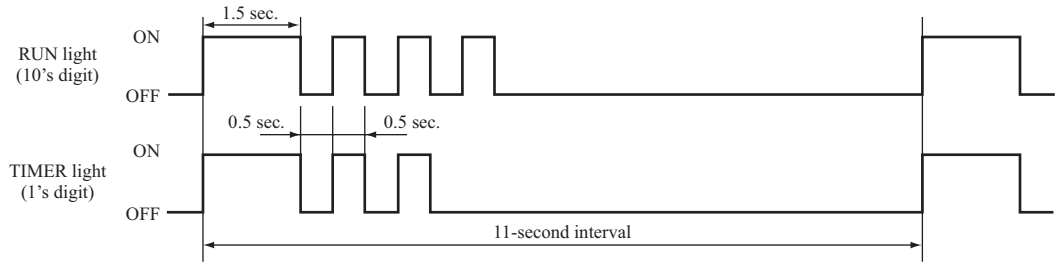
(c) Error code, stop code table (Assignment of error codes and stop codes is done in common for all models.)

Number of flashes when in service mode		Stop code or Error code	Error content		Cause	Occurrence conditions	Error display	Auto recovery
RUN light (10's digit)	TIMER light (1's digit)		Major category	Minor category				
OFF	OFF	0	Normal	—	—	—	—	—
1 time flash	1 time flash	11	Current Cut	Compressor software start	Compressor lock Compressor wiring short circuit Compressor output is open phase Outdoor PCB is faulty	Compressor start fails 42 times in succession and the reason for the final failure is current cut.	○ (2 times)	○
	2 time flash	12		Lower than 20 rps	Service valve closed Compressor output is open phase. Electronic expansion valve is faulty.	After the compressor starts, it stops due to current cut at less than 20 rps.	—	○
	3 time flash	13		20 rps or higher	Service valve is closed. Compressor output is open phase. Compressor is faulty. Electronic expansion valve is faulty.	When operation is stopped by current cut at 20 rps or higher.	—	○
	4 time flash	14		Excessive voltage	Outdoor PCB is defective. Power supply is abnormal.	When the DC voltage exceeds 390V.	—	○
	5 time flash	15		Short circuit in the power transistor (high side)	Outdoor PCB is faulty. Power transistor is damaged.	When it is judged that the power transistor was damaged at the time the compressor started.	○	—
	6 time flash	16		Current cut circuit breakdown	Outdoor PCB is faulty. Power transistor is damaged.	When it is judged that the power transistor was damaged at the time the compressor started.	○	—
	7 time flash	17		Software current cut	Service valve is closed. Compressor output is open phase. Compressor is faulty. Electronic expansion valve is faulty.	When the compressor has stopped with the current cut after starting it	○	○
2 time flash	2 time flash	22	Outdoor unit error	Compressor wiring is unconnection voltage drop	Compressor wiring is disconnected. Outdoor PCB is faulty.	When the curent is 1A or less the time the compressor started.	○	—
	3 time flash	23		Abnormal stop 3 times in 20 minutes.	Service valve is closed. Compressor output is open phase. Electronic expansion valve is faulty. Refrigerant is insufficient.	When an abnormal stop occurs 3 times with automatic recovery within 20 minutes after the outdoor unit's power supply was turned on.	○	—
	7 time flash	27	Outdoor fan motor error	Outdoor unit's fan motor is abnormal	Outdoor fan motor is faulty. Connector connections are poor. Outdoor PCB is faulty.	When a fan speed of 75 rpm or lower continues for 30 seconds or longer.	○ (3 times)	○
	8 time flash	28		Input of abnormal voltage	Power supply construction is faulty.	When an error voltage of 150 V or less is input	○	○
	9 time flash	29		Voltage drop	Power supply construction is defective. Outdoor PCB is faulty.	When the power supply voltage drops during operation.	—	○
3 time flash	1 time flash	31	Current safe	Cooling current safe I	Overcharge Compressor lock	When there is a current safe stop in current safe I mode during cooling operation.	—	○
	2 time flash	32		Heating current safe I	Overcharge Compressor lock	When there is a current safe stop in current safe I mode during heating operation.	—	○
	3 time flash	33		Cooling current safe II	Overcharge Compressor lock	When there is a current safe stop in current safe II mode during cooling operation.	—	○
	4 time flash	34		Heating current safe II	Overcharge Compressor lock	When there is a current safe stop in current safe II mode during heating operation.	—	○
	5 time flash	35		Cooling current safe III	Overcharge Compressor lock	When there is a current safe stop in current safe III mode during cooling operation.	—	○
	6 time flash	36		Heating current safe III	Overcharge Compressor lock	When there is a current safe stop in current safe III mode during heating operation.	—	○
	7 time flash	37		Heating current safe III + 3A	Overcharge Compressor lock	When there is a current safe stop in current safe III + 3A mode during heating operation.	—	○

Number of flashes when in service mode		Stop code or Error code	Error content		Cause	Occurrence conditions	Error display	Auto recovery
RUN light (10's digit)	TIMER light (1's digit)		Major category	Minor category				
4 time flash	1 time flash	41	Current safe	Cooling overload 1 (outdoor temperature: 36~40ºC)	Overcharge Compressor lock Overload operation	When there is a current safe stop in overload 1 mode during cooling operation.	—	○
	2 time flash	42		Heating overload 1 (outdoor temperature: 5~12ºC)	Overcharge Compressor lock Overload operation	When there is a current safe stop in overload 1 mode during heating operation.	—	○
	3 time flash	43		Cooling overload 2 (outdoor temperature: 40~45ºC)	Overcharge Compressor lock Overload operation	When there is a current safe stop in overload 2 mode during cooling operation.	—	○
	4 time flash	44		Heating overload 2 (outdoor temperature: 12~17ºC)	Overcharge Compressor lock Overload operation	When there is a current safe stop in overload 2 mode during heating operation.	—	○
	5 time flash	45		Cooling overload 3 (outdoor temperature: 45ºC~)	Overcharge Compressor lock Overload operation	When there is a current safe stop in overload 3 mode during cooling operation.	—	○
	6 time flash	46		Heating overload 3 (outdoor temperature: 17ºC~)	Overcharge Compressor lock Overload operation	When there is a current safe stop in overload 3 mode during heating operation.	—	○
5 time flash	OFF	50	Compressor overheat	110ºC	Refrigerant is insufficient. Discharge pipe sensor is faulty. Service valve is closed.	When the discharge pipe sensor's value exceeds the set value.	○ (2 times)	○
6 time flash	OFF	60	Serial signal transmission error	Can't receive signals for 1 minute 55 seconds (if communications have recovered)	Power supply is faulty. Power supply cables and signal lines are improperly wired. Indoor or outdoor PCB is faulty.	When 1 minute 55 seconds passes without communications signals from either the outdoor unit or the indoor unit being detected correctly.	—	○
	1 time flash	61		Connection lines between the indoor and outdoor units are faulty.	Connection lines between the indoor and outdoor units are faulty. Indoor or outdoor PCB are faulty.	When 10 seconds passes after the power is turned on without communications signals from the indoor or outdoor unit being detected correctly.	○	—
	2 time flash	62		Serial transmission error.	Indoor or outdoor PCB are faulty. Noise is causing faulty operation.	When 1 minute 55 seconds passes without communications signals from either the outdoor unit or the indoor unit being detected correctly.	○ (3 times)	○
7 time flash	OFF	70	Rotor lock	Rotor lock	Compressor is faulty. Compressor output is open phase. Electronic ex[ansion valve is faulty. Overload operation. Outdoor PCB is faulty	After the compressor starts, when the compressor stops due to rotor lock.	○ (2 times)	○
	6 time flash	76		Compressor software start (within 4 seconds after phase switching)	Compressor is faulty Compressor wiring is disconnected. Compressor wiring is short circuited. Outdoor PCB is faulty.	When compressor start fails 42 times in succession and the reason for the final failure is rotor lock.	○ (2 times)	○
8 time flash	OFF	80	Protective control operation	Indoor unit fan motor is abnormal.	Fan motor is faulty. Connector connections are poor. Indoor PCB is faulty.	When the indoor unit's fan motor is detected to be running at 300 rpm or lower speed with the fan motor in the ON condition while the air conditioner is running.	○	—
	1 time flash	81		Discharge pipe sensor is abnormal (anomalous stop).	Discharge pipe sensor wire is disconnected. Connector connections are poor.	When a disconnection signal is sent for 15 seconds or longer as the discharge pipe sensor data after the outdoor unit's speed is 0 rps or higher continuously for 9 minutes.	○ (4 times)	○
	2 time flash	82		Indoor heat exchanger sensor is abnormal (anomalous stop).	Indoor heat exchanger sensor wire is disconnected. Connector connections are poor.	When a temperature of -20ºC or lower is sensed continuously for 40 minutes during heating operation (the compressor stops).	○	—
	3 time flash	83		Outdoor heat exchanger sensor is abnormal (anomalous stop).	Outdoor heat exchanger sensor wire is disconnected. Connector connections are poor.	When a temperature of -55ºC or lower is sensed continuously for 40 minutes during heating operation (the compressor stops).	○	—
	4 time flash	84		Anti-condensation control	High humidity condition. Humidity sensor is faulty.	Anti-condensation prevention control is operating.	—	○
	5 time flash	85		Anti-frost control	Indoor unit fan speed drops. Indoor heat exchanger sensor short circuit	When the anti-frost control operates and the compressor stops during cooling operation.	—	○
	6 time flash	86		High pressure control	Heating overload Indoor unit fan speed drops Indoor heat exchanger sensor short circuit	When high pressure control operates during heating operation and the compressor stops.	—	○
	7 time flash	87		Compressor overheating protection control	Refrigerant is insufficient. Discharge pipe sensor is faulty. Service valve is closed.	When compressor overheating protective control operates and the compressor stops.	—	○
	8 time flash	88		Refrigeration cycle system protective control	Service valve is closed. Refrigerant is insufficient.	When refrigeration cycle system protective control operates.	—	○

Note (1) The number of flashes when in the Service Mode do not include the 1.5 second period when the lights light up at first (starting signal). (See the example shown below.)

• In the case of current safe (heating CT1) (example: stop code "32")
The RUN light (10's digit) flashes 3 times and the TIMER light (1's digit) flashes 2 times.
$3 \times 10 + 2 \times 1 = 32 \rightarrow$ From the table, read the instructions for error code 32, "Current safe (heating CT1).



(2) Abnormal Stop: – Is not displayed. (automatic recovery only)
◯Displayed.
If there is a ( ) displayed, the error display shows the number of times that an automatic recovery occurred for the same reason has reached the number of times in ( ).
If no ( ) is displayed, the error display shows that the trouble has occurred once.

(3) Automatic Recovery: – Does not occur
◯Automatic recovery occurs.

(d) Remote controller information tables

1) Operation switching

Display pattern when in service mode RUN light (Operation switching)	Operation switching when there is an abnormal stop
0	AUTO
1	DRY
2	COOL
3	FAN
4	HEAT

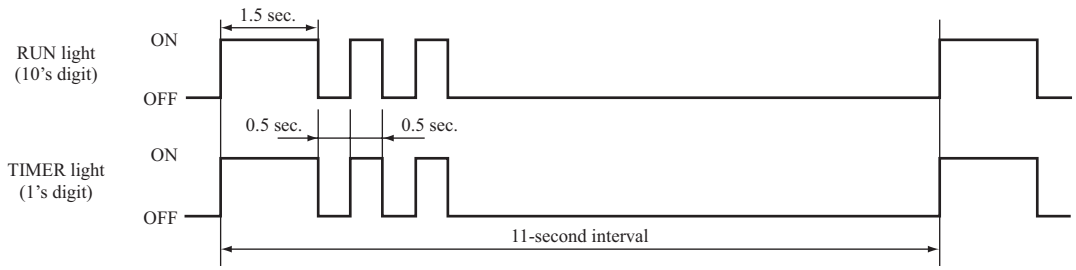
2) Fan speed switching

Display pattern when in service mode TIMER light (Fan speed switching)	Fan speed switching when there is an abnormal stop
0	AUTO
2	HI
3	MED
4	LO
6	HI POWER
7	ECONO

* If no data are recorded (error code is normal), the information display in the remote controller becomes as follows.

Remote controller setting	Display when error code is normal.
Operation switching	AUTO
Fan speed switching	AUTO

(Example): Operation switching, fan speed switching, cooling HI



(e) Room temperature sensor temperature, indoor heat exchanger sensor temperature, outdoor air temperature sensor temperature, outdoor heat exchanger sensor temperature table

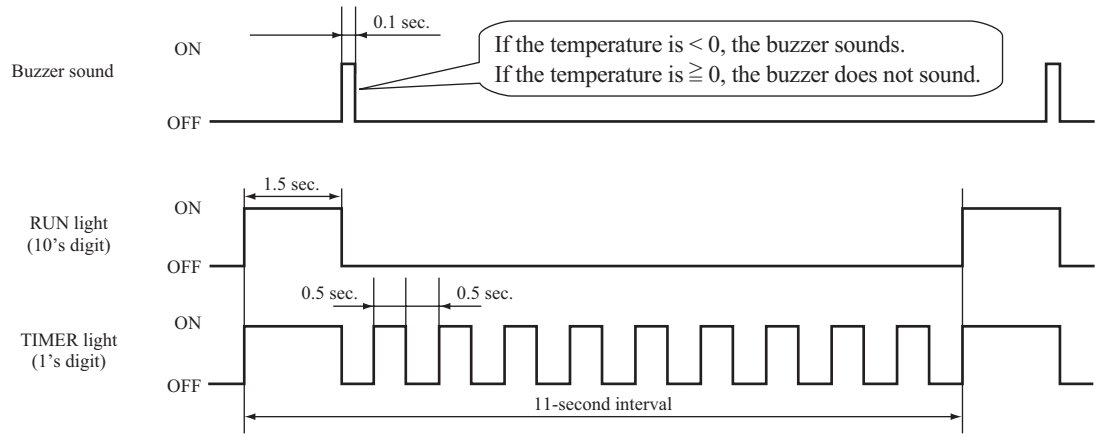
Units: ºC

Buzzer sound / RUN light (10's digit) / TIMER light (1's digit)		0	1	2	3	4	5	6	7	8	9
Yes (sounds for 0.1 second)	6	-60	-61	-62	-63	-64					
	5	-50	-51	-52	-53	-54	-55	-56	-57	-58	-59
	4	-40	-41	-42	-43	-44	-45	-46	-47	-48	-49
	3	-30	-31	-32	-33	-34	-35	-36	-37	-38	-39
	2	-20	-21	-22	-23	-24	-25	-26	-27	-28	-29
	1	-10	-11	-12	-13	-14	-15	-16	-17	-18	-19
	0		-1	-2	-3	-4	-5	-6	-7	-8	-9
No (does not sound)	0	0	1	2	3	4	5	6	7	8	9
	1	10	11	12	13	14	15	16	17	18	19
	2	20	21	22	23	24	25	26	27	28	29
	3	30	31	32	33	34	35	36	37	38	39
	4	40	41	42	43	44	45	46	47	48	49
	5	50	51	52	53	54	55	56	57	58	59
	6	60	61	62	63	64	65	66	67	68	69
	7	70	71	72	73	74	75	76	77	78	79
	8	80	81	82	83	84	85	86	87	88	89
	9	90	91	92	93	94	95	96	97	98	99

* If no data are recorded (error code is normal), the display for each sensor becomes as shown below.

Sensor name	Sensor value displayed when the error code is normal
Room temperature sensor temperature	-19ºC
Indoor heat exchanger sensor temperature	-64ºC
Outdoor air temperature sensor temperature	-64ºC
Outdoor heat exchanger sensor temperature	-64ºC

(Example) Room temperature, indoor heat exchanger, outdoor air temperature, outdoor heat exchanger: "-9ºC"



(f) Discharge pipe temperature table

Units: ºC

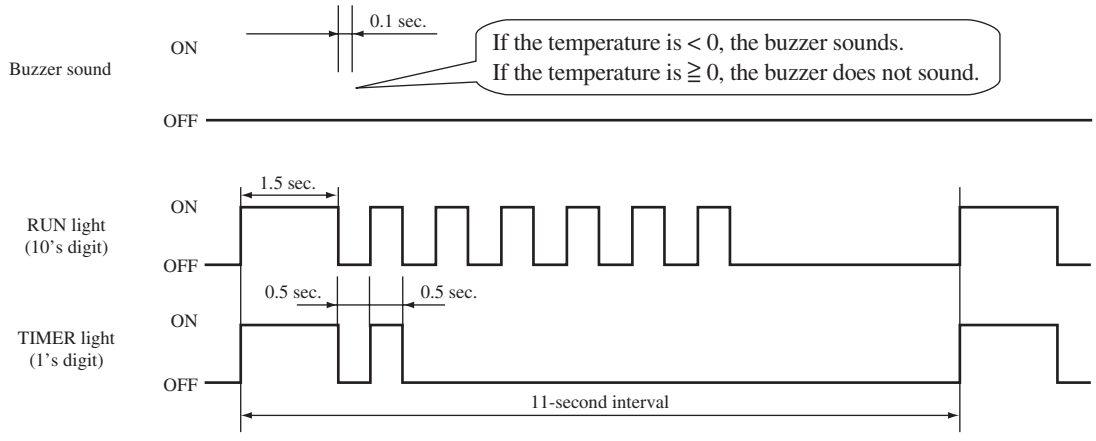
Buzzer sound	RUN light (10's digit) \ TIMER light (1's digit)	0	1	2	3	4	5	6	7	8	9
Yes (sounds for 0.1 second)	3	-60	-62	-64							
	2	-40	-42	-44	-46	-48	-50	-52	-54	-56	-58
	1	-20	-22	-24	-26	-28	-30	-32	-34	-36	-38
	0		-2	-4	-6	-8	-10	-12	-14	-16	-18
No (does not sound)	0	0	2	4	6	8	10	12	14	16	18
	1	20	22	24	26	28	30	32	34	36	38
	2	40	42	44	46	48	50	52	54	56	58
	3	60	62	64	66	68	70	72	74	76	78
	4	80	82	84	86	88	90	92	94	96	98
	5	100	102	104	106	108	110	112	114	116	118
	6	120	122	124	126	128	130	132	134	136	138
	7	140	142	144	146	148	150				

* If no data is recorded (error code is normal), the display for sensor becomes as shown below.

Sensor name	Sensor value displayed when the error code is normal
Discharge pipe sensor temperature	-64ºC

(Example) Discharge pipe temperature: "122ºC"

* In the case of discharge pipe data, multiply the reading value by 2. (Below, 61 x 2 = "122ºC")



Service data record form

Customer		Model	
Date of investigation			
Machine name			
Content of complaint			

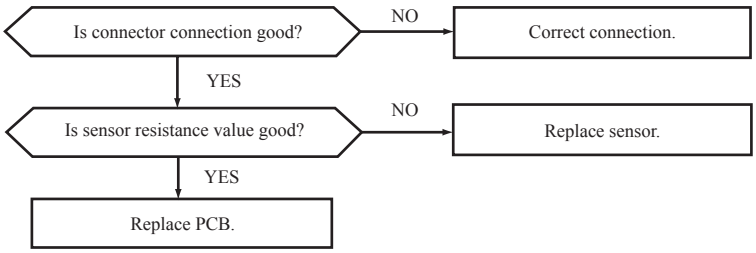
Remote controller settings			Content of displayed data	Display results			Display content
Temperature setting	Operation switching	Fan speed switching		Buzzer (Yes/No.)	RUN light (Times)	TIMER light (Times)	
21	Cooling	MED	Error code on previous occasion.				
		HI	Room temperature sensor temperature on previous occasion.				
		AUTO	Indoor heat exchanger sensor temperature on previous occasion.				
	Heating	LO	Remote control information on previous occasion.				
		MED	Outdoor air temperature sensor temperature on previous occasion.				
		HI	Outdoor heat exchanger sensor temperature on previous occasion.				
		AUTO	Discharge pipe sensor temperature on previous occasion.				
22	Cooling	MED	Error code on second previous occasion.				
		HI	Room temperature sensor temperature on second previous occasion.				
		AUTO	Indoor heat exchanger sensor temperature on second previous occasion.				
	Heating	LO	Remote control information on second previous occasion.				
		MED	Outdoor air temperature sensor temperature on second previous occasion.				
		HI	Outdoor heat exchanger sensor temperature on second previous occasion.				
		AUTO	Discharge pipe sensor temperature on second previous occasion.				
23	Cooling	MED	Error code on third previous occasion.				
		HI	Room temperature sensor temperature on third previous occasion.				
		AUTO	Indoor heat exchanger sensor temperature on third previous occasion.				
	Heating	LO	Remote control information on third previous occasion.				
		MED	Outdoor air temperature sensor temperature on third previous occasion.				
		HI	Outdoor heat exchanger sensor temperature on third previous occasion.				
		AUTO	Discharge pipe sensor temperature on third previous occasion.				
24	Cooling	MED	Error code on fourth previous occasion.				
		HI	Room temperature sensor temperature on fourth previous occasion.				
		AUTO	Indoor heat exchanger sensor temperature on fourth previous occasion.				
	Heating	LO	Remote control information on fourth previous occasion.				
		MED	Outdoor air temperature sensor temperature on fourth previous occasion.				
		HI	Outdoor heat exchanger sensor temperature on fourth previous occasion.				
		AUTO	Discharge pipe sensor temperature on fourth previous occasion.				
25	Cooling	MED	Error code on fifth previous occasion.				
		HI	Room temperature sensor temperature on fifth previous occasion.				
		AUTO	Indoor heat exchanger sensor temperature on fifth previous occasion.				
	Heating	LO	Remote control information on fifth previous occasion.				
		MED	Outdoor air temperature sensor temperature on fifth previous occasion.				
		HI	Outdoor heat exchanger sensor temperature on fifth previous occasion.				
		AUTO	Discharge pipe sensor temperature on fifth previous occasion.				
21	Cooling	Lo	Stop code on previous occasion.				
22			Stop code on second previous occasion.				
23			Stop code on third previous occasion.				
24			Stop code on fourth previous occasion.				
25			Stop code on fifth previous occasion.				
26			Stop code on sixth previous occasion.				
27			Stop code on seventh previous occasion.				
28			Stop code on eighth previous occasion.				
29			Stop code on ninth previous occasion.				
30			Stop code on tenth previous occasion.				

Judgment		Examiner	
Remarks			

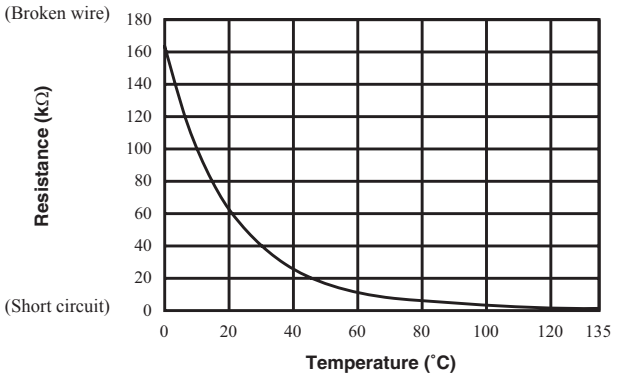
(7) Inspection procedures corresponding to detail of trouble

Sensor error

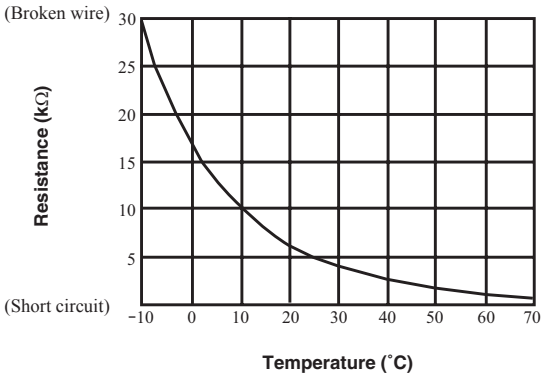
[Broken sensor wire, connector poor connection]



◆ **Discharge pipe sensor temperature characteristics**

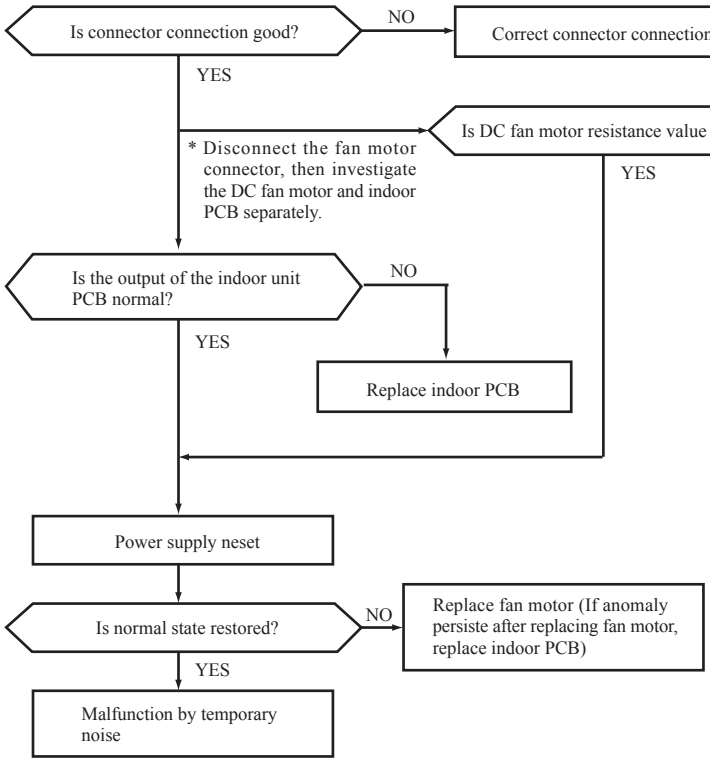


◆ **Sensor temperature characteristics (Room temp., indoor heat exchanger temp., outdoor heat exchanger temp., outdoor air temp.)**



Indoor fan motor error

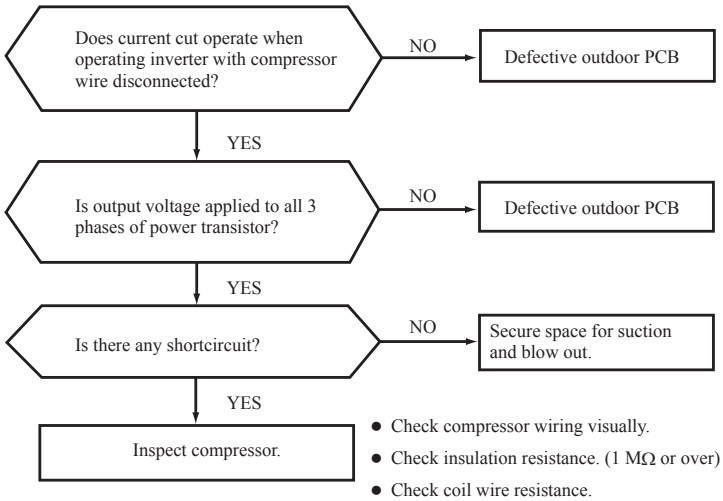
[Defective fan motor, connector poor connection, defective indoor PCB]



Notes (1) See pages 54 for the DC fan motor and indoor PCB check procedure.
(2) After making sure the DC fan motor and indoor PCB are normal, connect the connectors and confirm that the fan motor is turning.
(If power is turned on while one or the other is broken down, it could cause the other to break down also.)

Current cut

[Open phase on compressor output terminal, compressor lock]



- Check compressor wiring visually.
- Check insulation resistance. (1 MΩ or over)
- Check coil wire resistance.

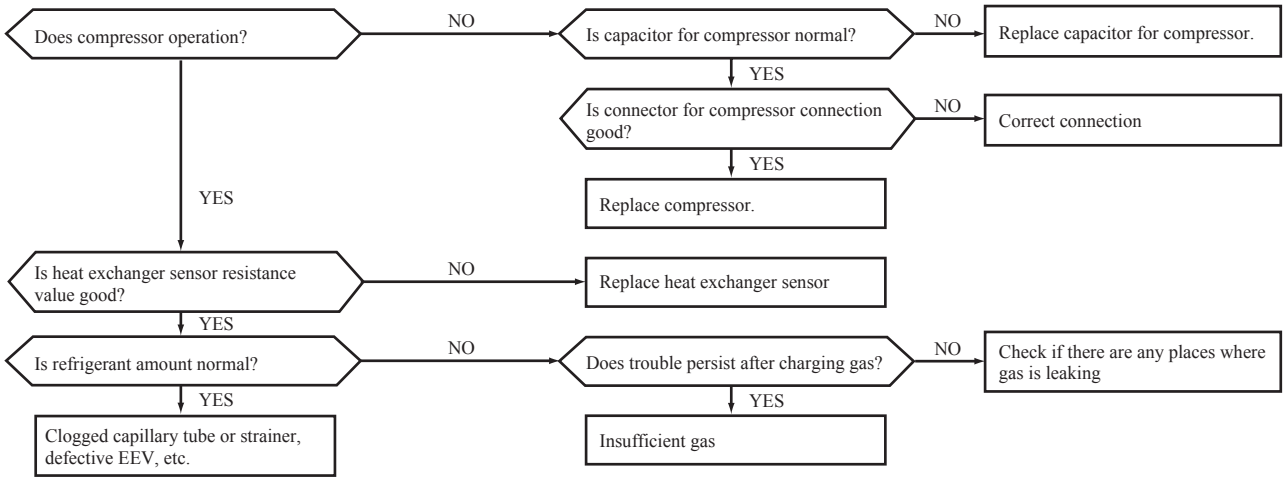
If check results are normal, compressor is locked.

Model 25, 35: 1.703Ω (U-V, V-W, U-W) or more at 20°C

Model 50 : 1.417Ω (U-V), 1.392Ω (V-W), 1.435Ω (U-W) or more at 20°C

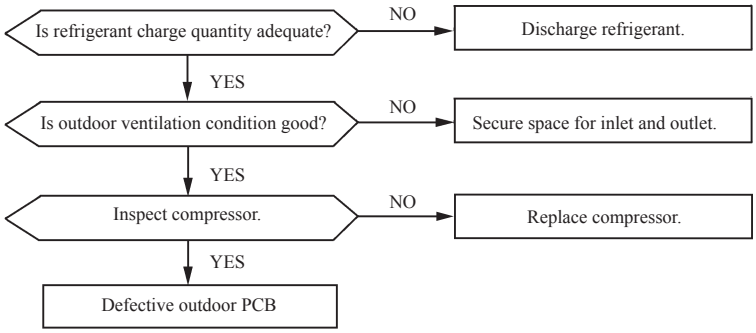
Trouble of outdoor unit

[Compressor malfunction of insufficient gas (refrigerant)]



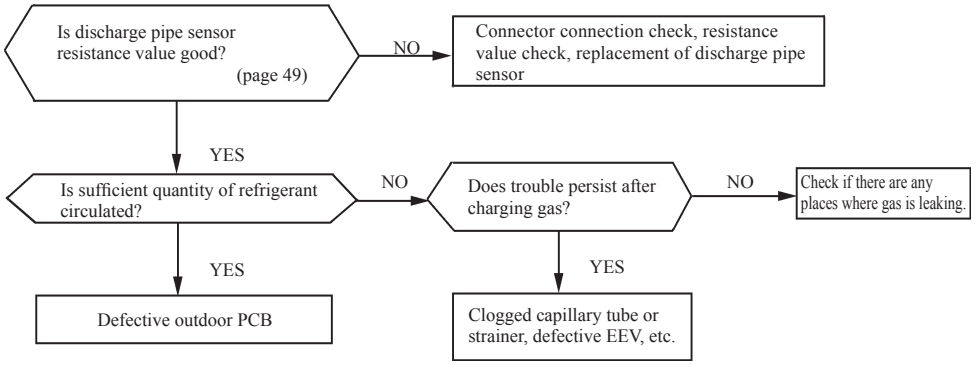
Current safe stop

[Overload operation, compressor lock, overcharge]



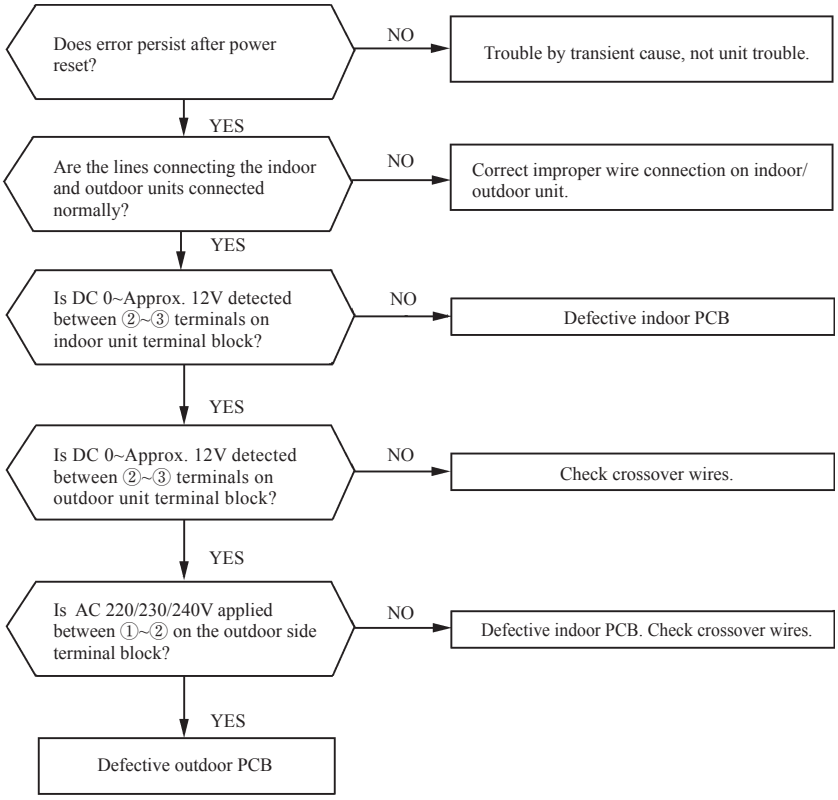
Over heat of compressor

[Gas shortage, defective discharge pipe sensor]



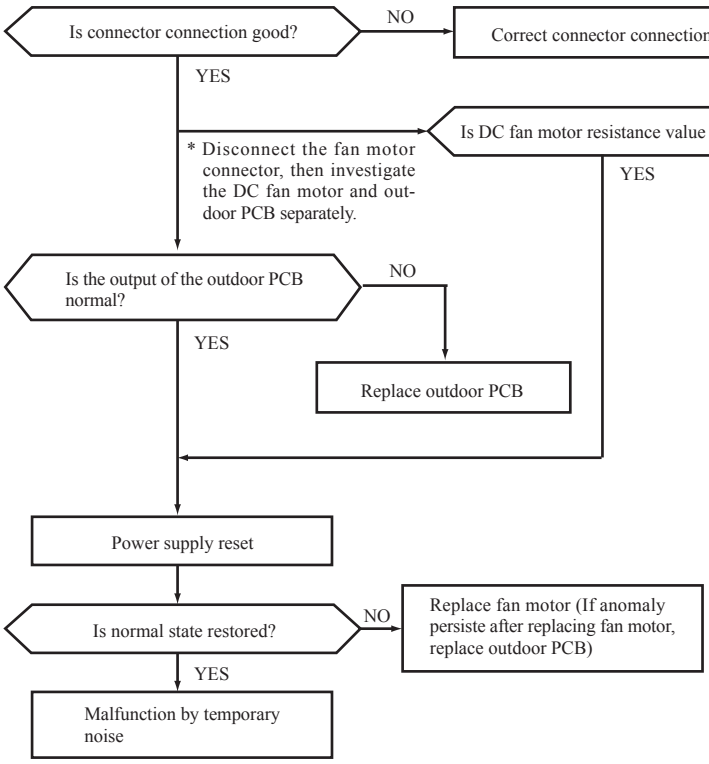
Error of signal transmission

[Wiring error including power cable, defective indoor/ outdoor PCB]



Outdoor fan motor error

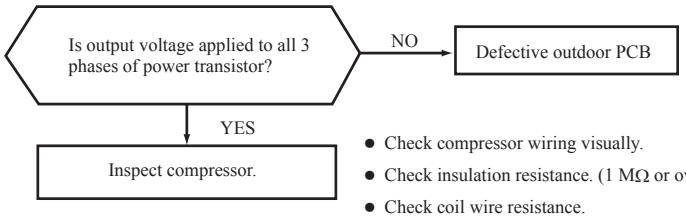
[Defective fan motor, connector poor connection, defective PCB]



Notes (1) See pages 57 for the DC fan motor and outdoor PCB check procedure.
(2) After making sure the DC fan motor and outdoor PCB are normal, connect the connectors and confirm that the fan motor is turning.
(If power is turned on while one or the other is broken down, it could cause the other to break down also.)

Rotor lock

[Compressor defect, outdoor PCB defect]



- Check compressor wiring visually.
- Check insulation resistance. (1 MΩ or over)
- Check coil wire resistance.

If check results are normal, compressor is locked.

Model 25, 35: 1.703Ω (U-V, V-W, U-W) or more at 20°C

Model 50 : 1.417Ω (U-V), 1.392Ω (V-W), 1.435Ω (U-W) or more at 20°C

(8) Phenomenon observed after shortcircuit, wire breakage on sensor

(a) Indoor unit

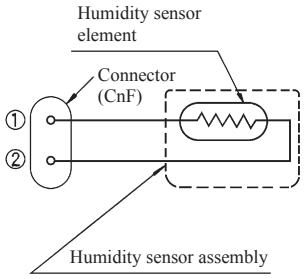
Sensor	Operation mode	Phenomenon	
		Shortcircuit	Broken wire
Room temperature sensor	Cooling	Release of continuous compressor operation command	Continuous compressor operation command is not released.
	Heating	Continuous compressor operation command is not released.	Release of continuous compressor operation command
Heat exchanger sensor	Cooling	System can be operated normally.	Continuous compressor operation command is not released. (Anti-frosting)
	Heating	High pressure control mode (Inverter stop command)	Hot keep (Indoor fan stop)
Humidity Sensor	Cooling	① in the table below.	① in the table below.
	Heating	Normal system operation is possible.	

Note (1) The humidity sensor is included in the model 35 and 50 only.

① Humidity sensor operation

Failure mode		Control input circuit reading	Air conditioning system operation
Disconnected wire	① Disconnected wire	Humidity reading is 0%	Operates in the Dry region
	② Disconnected wire	Humidity reading is 0%	Operates in the Dry region
	①② Disconnected wire	Humidity reading is 0%	Operates in the Dry region
Short Circuit	① and ② are short circuited	Humidity reading is 100%	Operates in the Cooling region.

Remark: Do not perform a continuity check of the humidity sensor with a tester. If DC current is applied, it could damage the sensor.

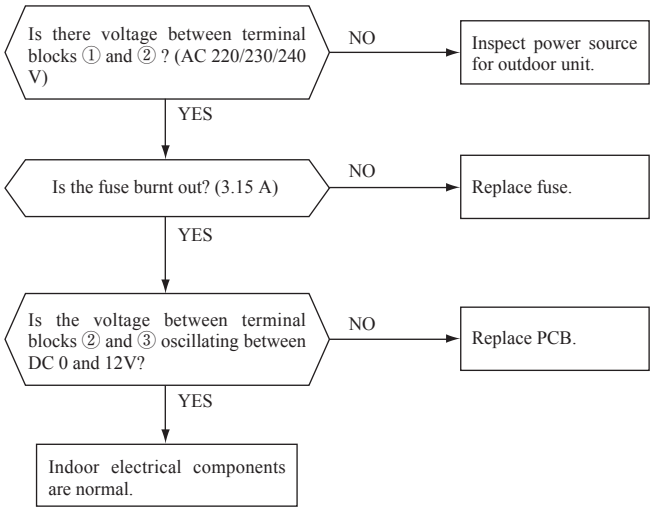


(b) Outdoor unit

Sensor	Operation mode	Phenomenon	
		Shortcircuit	Broken wire
Heat exchanger sensor	Cooling	System can be operated normally.	System can be operated normally.
	Heating	Defrosting is not performed.	Defrosting is performed for 10 minutes at approx. 45 minutes.
Outdoor air temperature sensor	Cooling	System can be operated normally.	System can be operated normally.
	Heating	Defrosting is not operated.	Defrosting is performed for 10 minutes at approx. 45 minutes.
Discharge pipe sensor	All modes	Compressor overload protection is disabled. (Can be operated.)	Compressor stop

(9) Checking the indoor electrical equipment

(a) Indoor PCB check procedure



(b) Indoor unit fan motor check procedure

This is a diagnostic procedure for determining if the indoor unit fan motor or the indoor PCB is broken down.

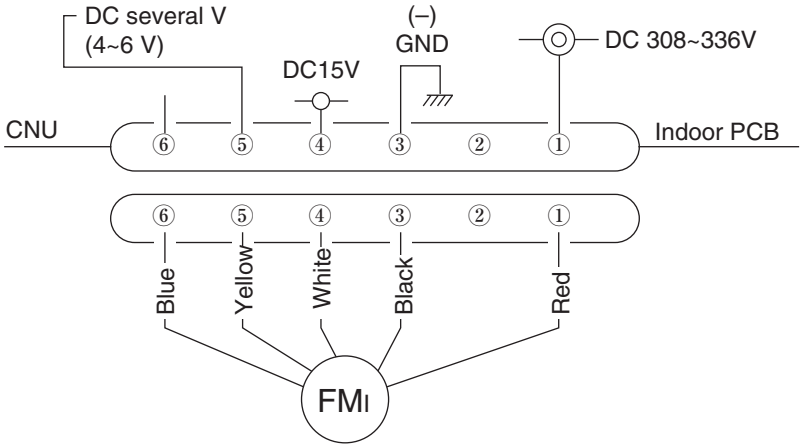
1) Indoor PCB output check

a) Turn off the power.

b) Remove the front panel, then disconnect the fan motor lead wire connector.

c) Turn on the power. If the unit operates when the ON/OFF button is pressed, if trouble is detected after the voltages in the following figure are output for approximately 30 seconds, it means that the indoor PCB is normal and the fan motor is broken down.

If the voltages in the following figure are not output at connector pins No. ①, ④ and ⑤, the indoor indoor PCB has failed and the fan motor is normal.

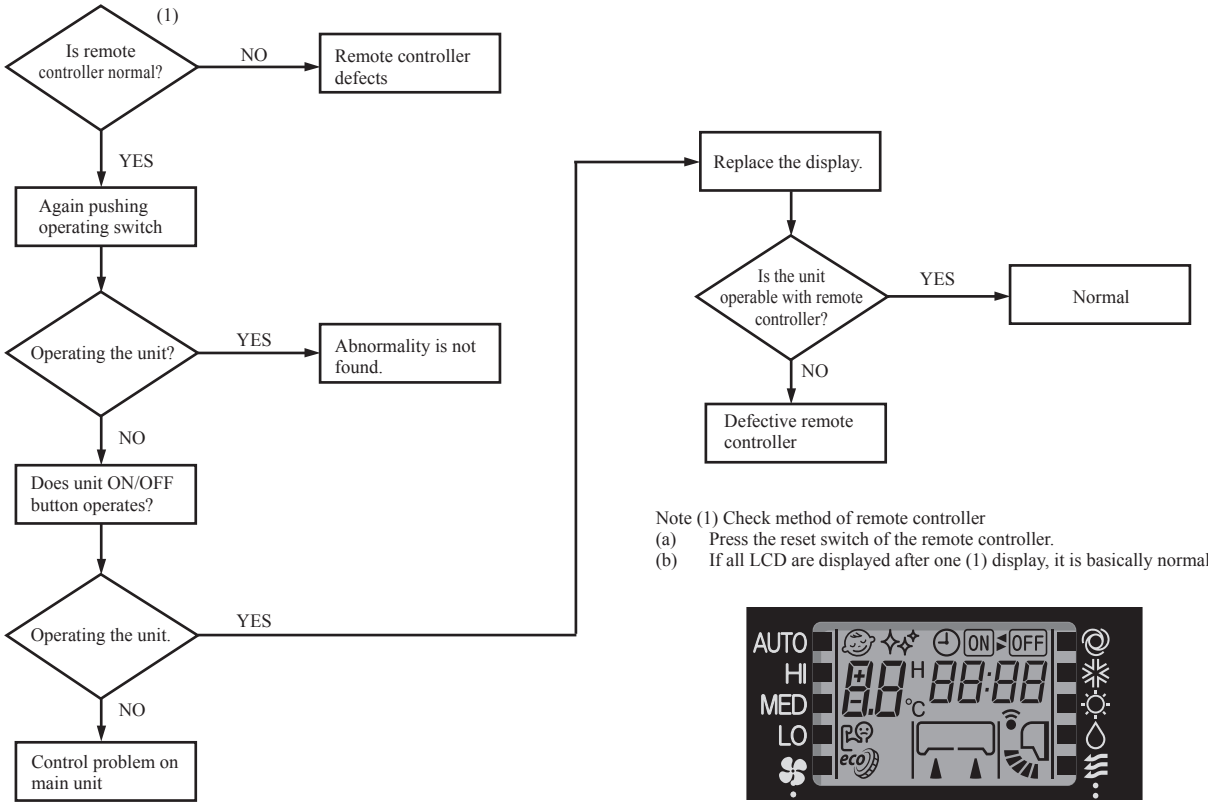


2) DC Fan motor resistance check

Measuring Point	Resistance when Normal
① – ③ (Red – Black)	25 MΩ or higher
④ – ③ (White – Black)	30 kΩ or higher

Notes (1) Remove the fan motor and measure it without power connected to it.
(2) If the measured value is below the value when the motor is normal, it means that the fan motor is faulty.

(10) How to make sure of wireless remote controller



Note (1) Check method of remote controller
(a) Press the reset switch of the remote controller.
(b) If all LCD are displayed after one (1) display, it is basically normal.

◆ **Check point of outdoor unit**

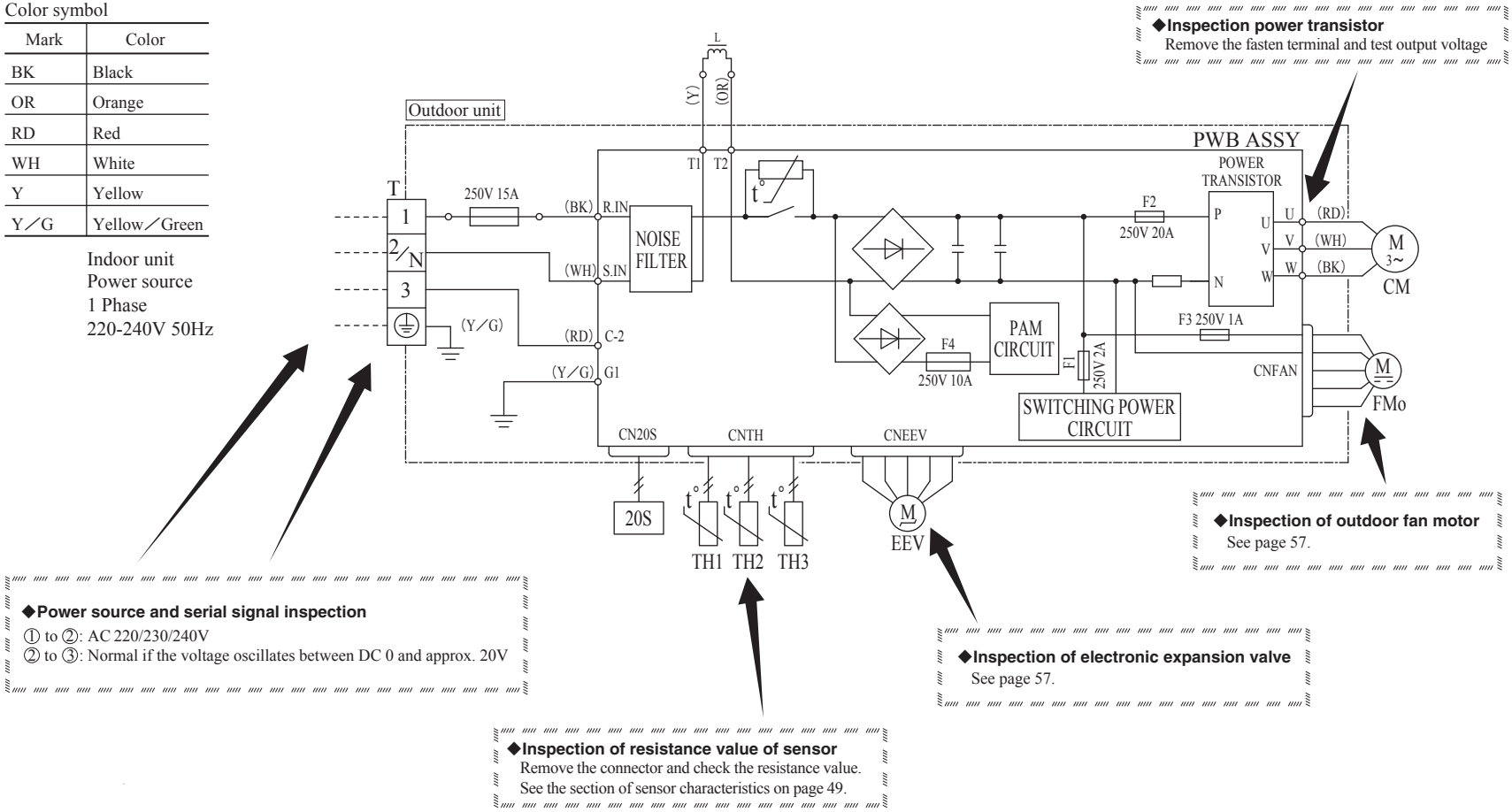
⚠CAUTION– HIGH VOLTAGE

High voltage is produced in the control box. Don't touch electrical parts in the control box for 5 minutes after the unit is stopped.

Color symbol

Mark	Color
BK	Black
OR	Orange
RD	Red
WH	White
Y	Yellow
Y／G	Yellow／Green

Indoor unit
Power source
1 Phase
220-240V 50Hz



◆**Inspection power transistor**
Remove the fasten terminal and test output voltage

◆**Inspection of outdoor fan motor**
See page 57.

◆**Power source and serial signal inspection**
① to ②: AC 220/230/240V
② to ③: Normal if the voltage oscillates between DC 0 and approx. 20V

◆**Inspection of electronic expansion valve**
See page 57.

◆**Inspection of resistance value of sensor**
Remove the connector and check the resistance value.
See the section of sensor characteristics on page 49.

◆ Check point of outdoor unit

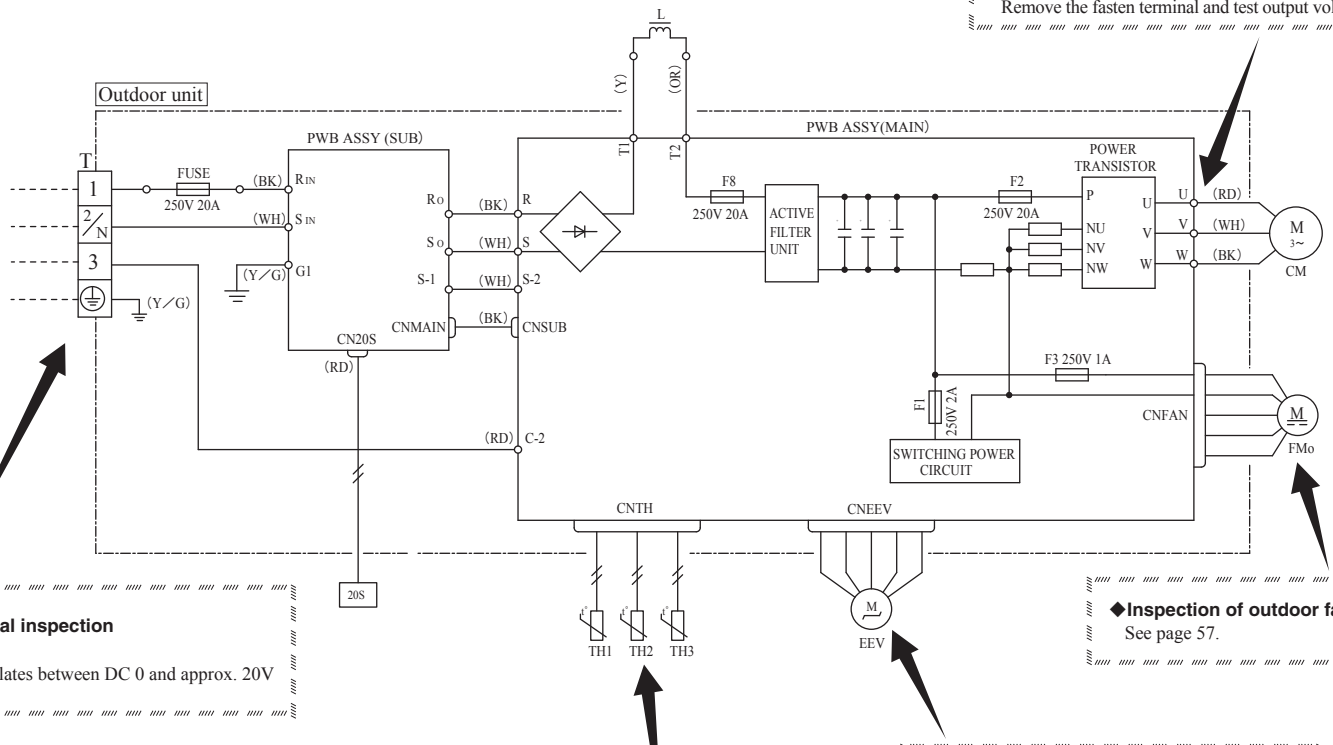
⚠CAUTION– HIGH VOLTAGE

High voltage is produced in the control box. Don't touch electrical parts in the control box for 5 minutes after the unit is stopped.

Color symbol

Mark	Color
BK	Black
OR	Orange
RD	Red
WH	White
Y	Yellow
Y／G	Yellow／Green

Indoor unit
Power source
1 Phase
220-240V 50Hz



◆Power source and serial signal inspection
① to ②: AC 220/230/240V
② to ③: Normal if the voltage oscillates between DC 0 and approx. 20V

◆Inspection power transistor
Remove the fasten terminal and test output voltage

◆Inspection of outdoor fan motor
See page 57.

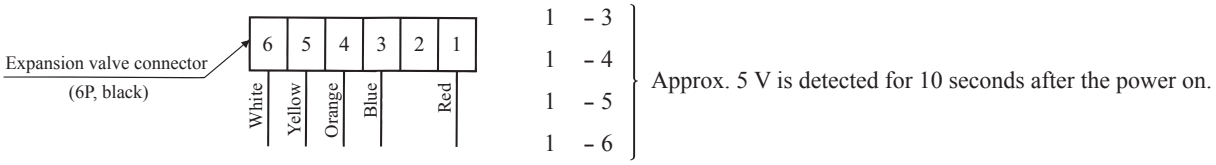
◆Inspection of electronic expansion valve
See page 57.

◆Inspection of resistance value of sensor
Remove the connector and check the resistance value.
See the section of sensor characteristics on page 49.

(a) Inspection of electronic expansion valve

Electronic expansion valve operates for approx. 10 seconds after the power on, in order to determine its aperture. Check the operating sound and voltage during the period of time. (Voltage cannot be checked during operation in which only the aperture change occurs.)

1) If it is heard the sound of operating electronic expansion valve, it is almost normal.
2) If the operating sound is not heard, check the output voltage.



3) If voltage is detected, the outdoor PCB is normal.
4) If the expansion valve does not operate (no operating sound) while voltage is detected, the expansion valve is defective.

• Inspection of electronic expansion valve as a separate unit

Measure the resistance between terminals with an analog tester.

Measuring point	Resistance when normal
1 – 6	46 ± 4Ω (at 20°C)
1 – 4	
1 – 3	
1 – 5	

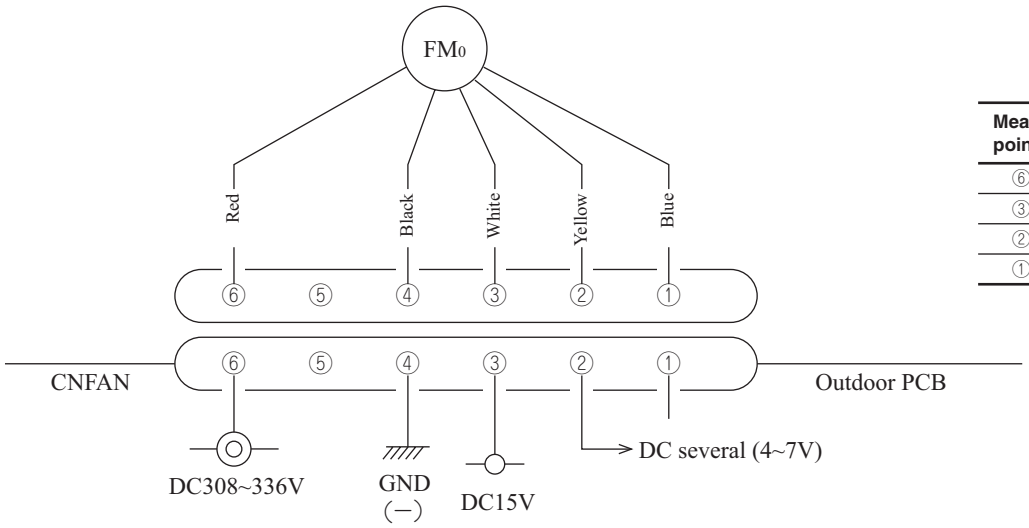
(b) Outdoor unit fan motor check procedure

• When the outdoor unit fan motor error is detected, diagnose which of the outdoor unit fan motor or outdoor PCB is defective.
• Diagnose this only after confirming that the indoor unit is normal.

(1) Outdoor PCB output check

1) Turn off the power.
2) Disconnect the outdoor unit fan motor connector CNFAN.
3) When the indoor unit is operated by inserting the power supply plug and pressing (ON) the backup switch for more than 5 seconds, if the voltage of pin No. ② in the following figure is output for 30 seconds at 20 seconds after turning "ON" the backup switch, the outdoor PCB is normal but the fan motor is defective.
If the voltage is not detected, the outdoor PCB is defective but the fan motor is normal.

Note (1) The voltage is output 3 times repeatedly. If it is not detected, the indoor unit displays the error message.



Measuring point	Resistance when normal
⑥ - ④	DC 308~336V
③ - ④	DC 15V
② - ④	DC several V (4~7V)
① - ④	DC several V (4~7V)

2) Fan motor resistance check

Measuring point	Resistance when normal
⑥ - ④ (Red - Black)	20 MΩ or higher
③ - ④ (White - Black)	20 MΩ or higher

Notes (1) Remove the fan motor and measure it without power connected to it.
(2) If the measured value is below the value when the motor is normal, it means that the fan motor is faulty.

INVERTER WALL MOUNTED TYPE
RESIDENTIAL AIR-CONDITIONERS

MITSUBISHI HEAVY INDUSTRIES, LTD.

Air-Conditioning & Refrigeration Systems Headquarters
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